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Revision of the genus *Amygdalops* Lamb, 1914 (Diptera: Anthomyzidae) of the Afrotropical Region

by

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ABSTRACT

The Afrotropical species of the genus *Amygdalops* Lamb, 1914 (Anthomyzidae) are revised. The genus is newly diagnosed with emphasis on apomorphies demonstrating its monophyly. Eleven species are recognised, keyed and illustrated. Descriptions of eight species new to science are given, viz. *A. acer* sp.n. (male only), *A. major* sp.n., *A. obscurior* sp.n., *A. obtusus* sp.n., *A. poecilus* sp.n., *A. simplicior* sp.n., *A. sparsus* sp.n. and *A. undulatus* sp.n. The remaining three species, *A. thomasseti* Lamb, 1914 (new records: Madagascar, Mauritius, Mozambique, Senegal, South Africa, Uganda), *A. nigrinotum* Sueyoshi & Roháček, 2003 (new record: Seychelles) and *A. trivittatus* Frey, 1958 (female only; Cape Verde Is.) are redescribed. The relationships of all species are discussed on the basis of newly discovered features of the male and female postabdominal structures and their known distribution is reviewed.

INTRODUCTION

The genus *Amygdalops* Lamb, 1914 comprises slender anthomyzid flies characterised by very convex oval eyes, long pectinate arista, fore femur without posteroventral ctenidial spine and usually ornamented wing with distinctive subapical dark spot. Representatives of the genus have been known only from tropical and subtropical areas of the Old World (Roháček 1998*a*). Hitherto, a total of six species have been described, viz. *A. thomasseti* Lamb, 1914 (the type species; Afrotropical and southwestern Palaearctic), *A. rufior* Roháček & Freidberg, 1993 (Israel), *A. trivittatus* Frey, 1958 (Cape Verde Is.), *A. geniculatus* de Meijere, 1916 (Java), *A. lineola* de Meijere, 1916 (Java) and *A. nigrinotum* Sueyoshi & Roháček, 2003 (Java, Japan, Hawaii). However, *Amygdalops* is more diverse in the Old World tropics than formerly anticipated. The present revision of the Afrotropical members of this genus revealed as many as 11 species but this number represents only some of the existing fauna in the region. This is indicated by five further recognised species which were left undescribed because of insufficient material for description and type designation.

Despite the fragmentary knowledge it is presupposed that the African continent represents the evolutionary centre of *Amygdalops*. Not only the greatest species diversity and the largest morphological radiation were observed in the African fauna of the genus, but the sister-group of *Amygdalops*, viz. the genus *Margdalops* Roháček & Barraclough, 2003, also proved to be of Afrotropical origin.

The genus *Amygdalops* has not been sufficiently diagnosed except for the original description by Lamb (1914) based on a single species. All subsequent authors used only a few key features to characterise the genus (Hardy & Delfinado 1980; Roháček & Freidberg 1993; Roháček 1998*b*). The knowledge gained during this study on the more diverse Afrotropical fauna enabled me to establish the taxonomic limits of the genus and to diagnose it with emphasis on apomorphic characters. The relationships of *Amygdalops* have been discussed in a paper dealing with the sister genus *Margdalops* (Roháček & Barraclough 2003).

MATERIAL AND METHODS

The material examined during this study is deposited in the following collections: AMSA – Australian Museum, Sydney, Australia; BLKU – Biosystematics Laboratory, Graduate Institute of Social and Cultural Studies, Kyushu University, Fukuoka, Japan; BMNH – The Natural History Museum (formerly British Museum of Natural History), London, England, U.K.; MHNG – Muséum d'Histoire Naturelle, Genève, Switzerland; MNHN – Entomologie, Muséum National d'Histoire Naturelle, Paris, France; MRAC – Musée Royal de l'Afrique centrale, Tervuren, Belgium; MZHF – Universitetets Zoologiska Museum, Helsinki, Finland; MZLU – Museum of Zoology, Lund University, Lund, Sweden; NMSA – Natal Museum, Pietermaritzburg, South Africa; NMWC – National Museum of Wales, Cardiff, Wales, U.K.; SMOC – Silesian Museum, Opava, Czech Republic; TAUI – National Collection of Insects, Department of Zoology, Tel Aviv University, Tel Aviv, Israel; USNM – National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA.

The presentation of label data is strictly verbatim for type specimens but standardised for other material examined. Abdomens of most specimens were detached and genitalia dissected. After examination, all dissected parts were placed in plastic tubes containing glycerine, and pinned below the respective specimens; this is indicated by the abbreviation 'genit. prep.' in the text.

The genus *Amygdalops* is diagnosed following the sequence of characters listed by Roháček (1999*b*). Only the type species, *A. thomasseti*, is described in detail; descriptions of other species are abbreviated, avoiding all features which are not different from those of the latter species or are described in the generic diagnosis. Morphological terminology follows that of Roháček (1998*a*, 1999*a*), including terms used to describe the male hypopygium. The 'hinge' hypothesis for the origin of the eremoneuran hypopygium, rediscovered and documented by Zatwarnicki (1996), has been accepted and, therefore, the following alterations of terms of the male genitalia need to be listed (new term first): ejacapodeme = ejaculatory apodeme, epandrium = periandrium, medandrium = intraperiandrial sclerite, phallapodeme = aedeagal apodeme, transandrium = posterior hypandrial bridge. Morphological characters of the male genitalia are shown in Figs 2, 7–11, 26 and 29, and of the female postabdomen and genitalia in Figs 12–14 and 23.

The cladistic analysis of the phylogenetic relationships has been hand-made using the genus *Margdalops* as the sister group of *Amygdalops* (see Roháček & Barraclough 2003) with emphasis on the selection of the most parsimonous cladogram.

Abbreviations of morphological terms used in text and/or figures:

A_1 – anal vein
ac – acrostichal (seta)
afa – aedeagal part of folding apparatus
ag – accessory gland
bm – basal membrane
C – costa
ce – cercus
cp – caudal process of transandrium
cs – connecting sclerite
Cs_3, Cs_4 – 3rd, 4th costal section
ct – ctenidial spine
CuA_1 – cubitus
dc – dorsocentral (seta)
dm – discal medial cell
dm-cu – discal medial-cubital (= posterior, t_p) cross-vein
ea – ejacapodeme
ep – epandrium
f – filum of distiphallus
f_1, f_2, f_3 – fore, mid, hind femur
fc – fulcrum of phallapodeme
gs – gonostylus
hl – hypandrial lobe
hu – humeral (= postpronotal) (seta)
hy – hypandrium
is – internal sclerite(s)
M – media
ma – medandrium
mspl – mesopleural (= anepisternal) (seta)
npl – notopleural (seta)
oc – ocellar (seta)
occe – external occipital (seta)
ors – orbital (seta)
pa – postalar (seta)
pg – postgonite
pha – phallapodeme
pp – phallophore
ppl – propleural (= proepisternal) (seta)
prg – pregonite
prs – presutural (seta)
pvt – postvertical (seta)
R_1 – 1st branch of radius
R_{2+3} – 2nd branch of radius
R_{4+5} – 3rd branch of radius
r-m – radial-medial (= anterior, t_a) cross-vein
r-m\dm-cu: dm-cu – ratio of length of sector of M between cross-veins and length of posterior cross-vein
s – saccus of distiphallus
S2–S10 – abdominal sterna
sa – supraalar (seta)
sc – scutellar (seta)
Sc – subcosta
sp – spermatheca
stpl – sternopleural (= katepisternal) (seta)
T1–T10 – abdominal terga
t_1, t_2, t_3 – fore, mid, hind tibia
ta – transandrium
vi – vibrissa
vr – ventral receptacle
vte – outer vertical (seta)
vti – inner vertical (seta)

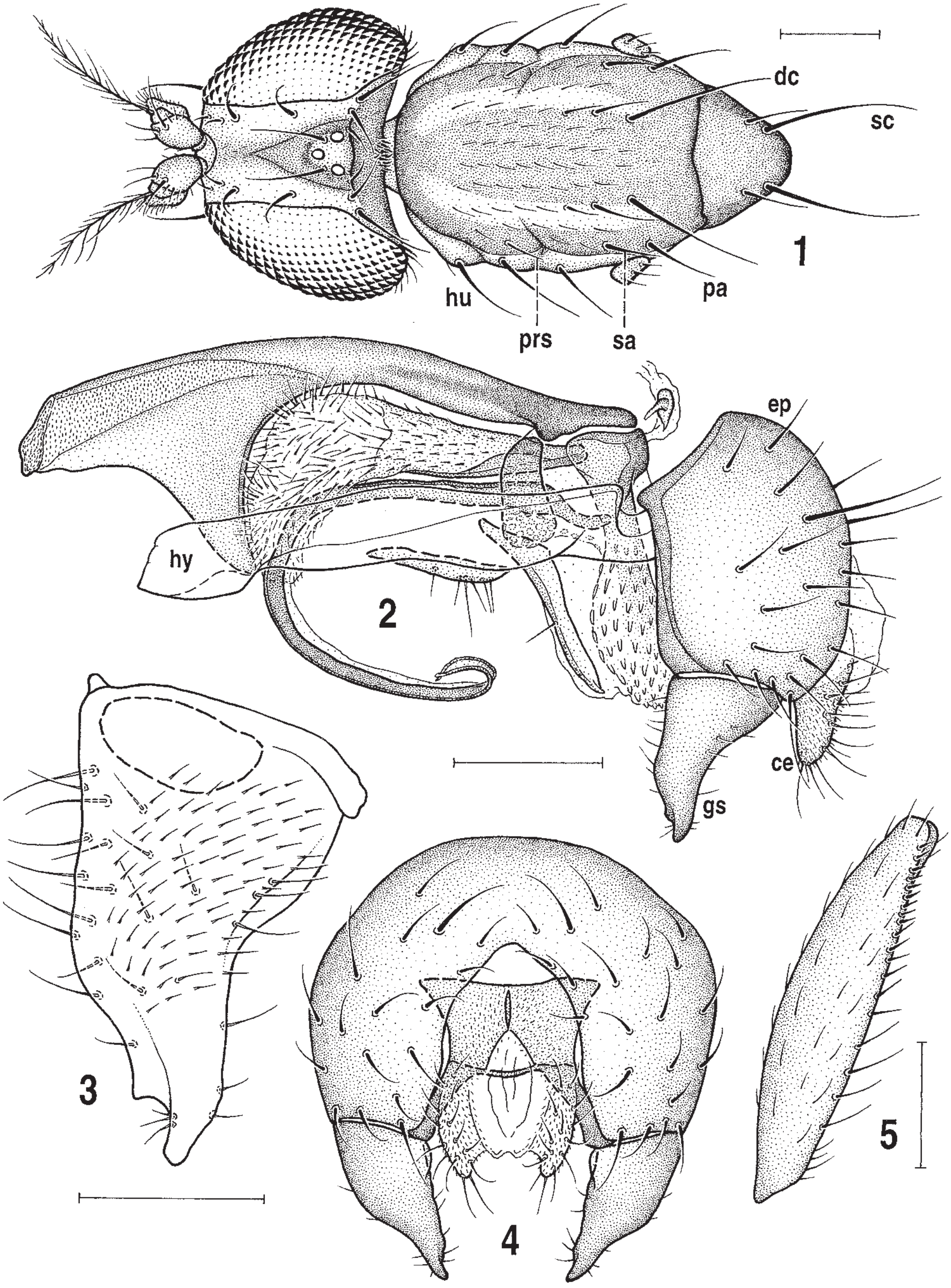
Genus *Amygdalops* Lamb, 1914

Amygdalops Lamb, 1914: 357, Fig. 39, Pl. 21, Figs 48–51 [description]; Roháček & Freidberg 1993: 64, Figs 64–93, 119–120 [key]; Roháček 1998*b*: 276, Figs 22.6–7, 22.18–20 [key].

Type species: *Amygdalops thomasseti* Lamb, 1914: 358 by original designation.

Diagnosis:

(1) *Head* (Figs 1, 20): Slightly higher than long to slightly longer than high. (2) Eye large, very convex, elongately ellipsoid, with longest diameter oblique. (3) Occiput strongly concave. (4) Frons very narrow; frontal triangle long, narrow and shining. (5) Frontal lunule reduced, indistinct. (6) Antenna strongly geniculate between pedicel and 1st flagellomere; pedicel overlapping base of 1st flagellomere. (7) Arista very long pectinate, with longest rays dorsoproximally. (8) Palpus slender, with 1 distinct subapical seta. Cephalic chaetotaxy: (9) pvt short but crossed or strongly convergent; (10) vte



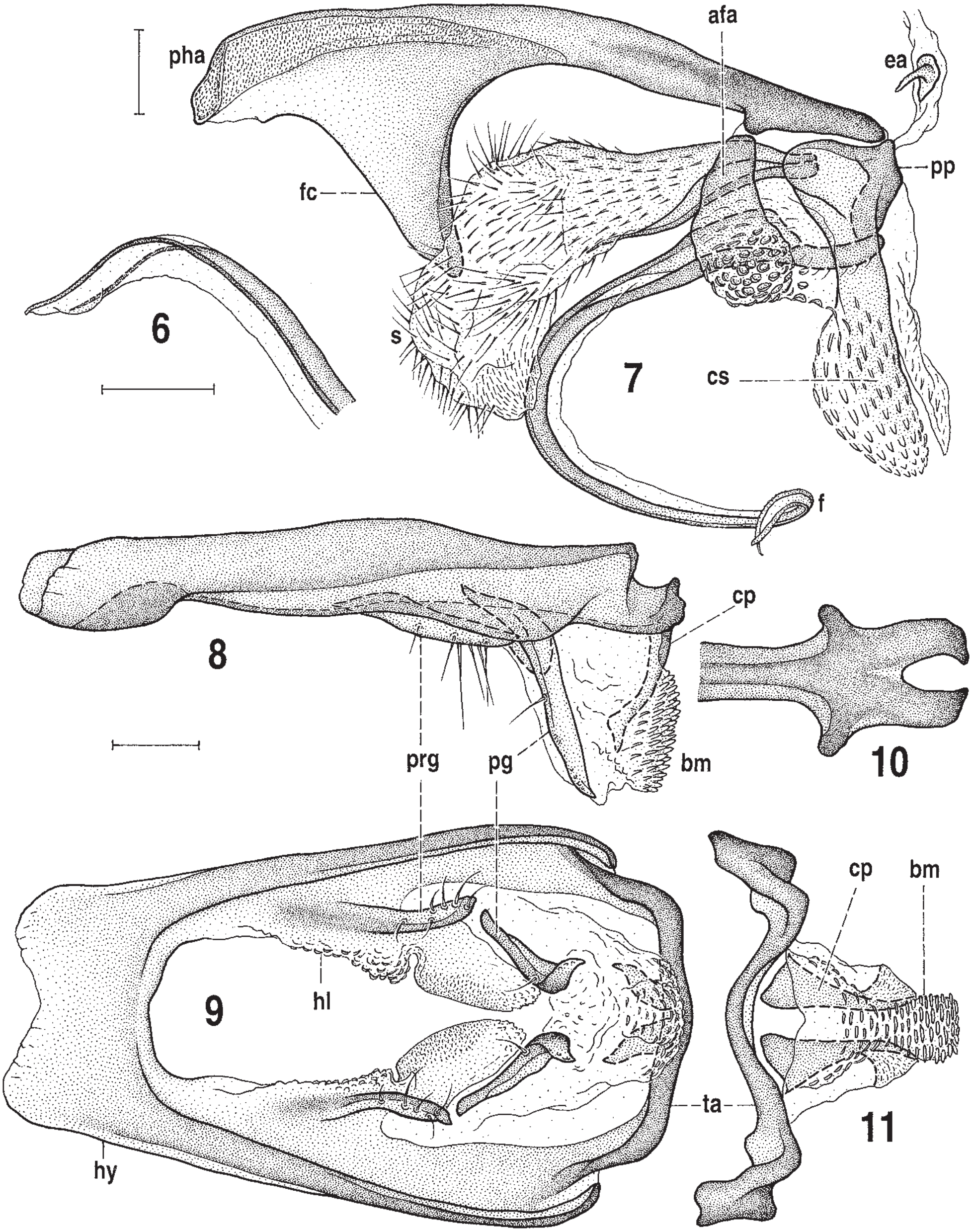
Figs 1–5. *Amygdalops thomasseti* Lamb, male (Israel). 1. Head and thorax, dorsal view. 2. Genitalia, lateral view (hypandrium not dotted). 3. Gonostylus, sublateral view (widest extension). 4. External genitalia, caudal view. 5. Hind femur, posterior view. Scales: Figs 1, 5 = 0.2 mm, Fig. 3 = 0.05 mm, others = 0.1 mm. For abbreviations see text. Illustration according to Roháček & Freidberg (1993).

longest of cephalic setae; (11) vti markedly shorter than vte, about as long as oc; (12) 2 long ors, the posterior in the middle of orbit, the anterior close to fore margin of frons; 2 (less often 1) microsetulae just in front of anterior ors; (13) a single row of minute postocular setulae; (14) 1 long vi and 1 somewhat shorter subvibrissa; (15) peristomal setulae few in number, short, but at least twice as long as postoculars.

(16) *Thorax* (Fig. 1): Distinctly narrower than head, subshining. (17) Pleura with dark, longitudinal band at dorsal margin. Thoracic chaetotaxy: (18) 1 hu, 2 npl (anterior longer); (19) 1 short sa, 1 longer pa; (20) 1 small prs; (21) 2 postsutural dc, both in prescutellar portion of scutum, the posterior very long, the anterior short to very small; (22) ac microsetae in 4 rows in front of suture; (23) 2 sc, the apical long, the laterobasal small; (24) 1 minute (to invisible) ppl; (25) 2 stpl, the anterior always shorter and weaker. Legs: (26) Fore leg always unicolorous, yellow; (27) f_1 without ctenidial spine; (28) t_2 with distinct ventroapical seta; (29) male f_3 with posteroventral row of setae which are shortened and thickened in distal third. (30) Wing (Figs 122–132) long and very narrow; (31) wing membrane usually ornamented by dark subapical spot and some whitish areas; unicolorous in most primitive members only; (32) C without distinct spinulae; (33) R_{2+3} long, sinuous, ending about twice further from apex of R_{4+5} than M; (34) R_{4+5} straight to strongly sinuous; (35) R_{4+5} and M slightly to strongly convergent in apical fourth of wing; (36) M usually straight but sometimes sinuous; (37) discal (dm) cell short and narrow, with cross-vein r-m situated near its middle (38) CuA_1 shortened, not reaching wing margin; (39) A_1 and anal lobe reduced, anal cell narrow; (40) alula small and very narrow.

Male abdomen: (41) T1 separate from T2, at least dorsally; (42) T2–T5 large and broad. (43) S1–S5 much narrower and usually paler than associated terga. Male postabdomen: (44) T6 small, transverse, weakly sclerotised; (45) S6–S8 fused dorsolaterally; (46) S6 strongly asymmetrical and its ventral part very short; (47) S7 asymmetrical, placed laterally; (48) S8 relatively long, less asymmetrical and situated dorsally.

Male genitalia (Figs 2–4, 6–11, 26–29): (49) Epandrium moderately broad, with relatively sparse setae, 1–2 pairs of setae usually longer. (50) Medandrium variable in size, usually relatively high; (51) cercus moderate to long, weakly sclerotised, finely setose. (52) Gonostylus with longest setae in anterior half of inner side, micropubescence on outer side usually well developed. (53) Hypandrium with internal dorsally projecting lobes flat and membranous; (54) transandrium (Fig. 11) with caudal process usually represented by a pair of band-like sclerites. (55) Pregonite fused to hypandrium, only posteriorly separated by narrow notch (Figs 9, 26), either incurved or somewhat projecting ventrally. (56) Postgonite usually simple and slender, more or less flattened and with characteristic basal sclerite attached to its proximal part. (57) Aedeagal part of folding apparatus (Fig. 7) dorsally dark and sclerotised, attached to base of phallapodeme, laterally provided by lenticular or tuberculate armature; (58) connecting sclerite (Figs 7, 26) usually slender and long, pale pigmented. (59) Basal membrane usually with sclerotised structures (short spines or tubercles). (60) Phallapodeme with distinctly bifurcate base and more or less distinct lateral projections in front of it (Fig. 10). (61) Aedeagus with short phallophore and (62) distiphallus composed of voluminous membranous saccus and slender sclerotised filum. (63) Membrane of saccus overgrown by rich spines of various length and thickness; (64) filum formed by 2 long, dark,



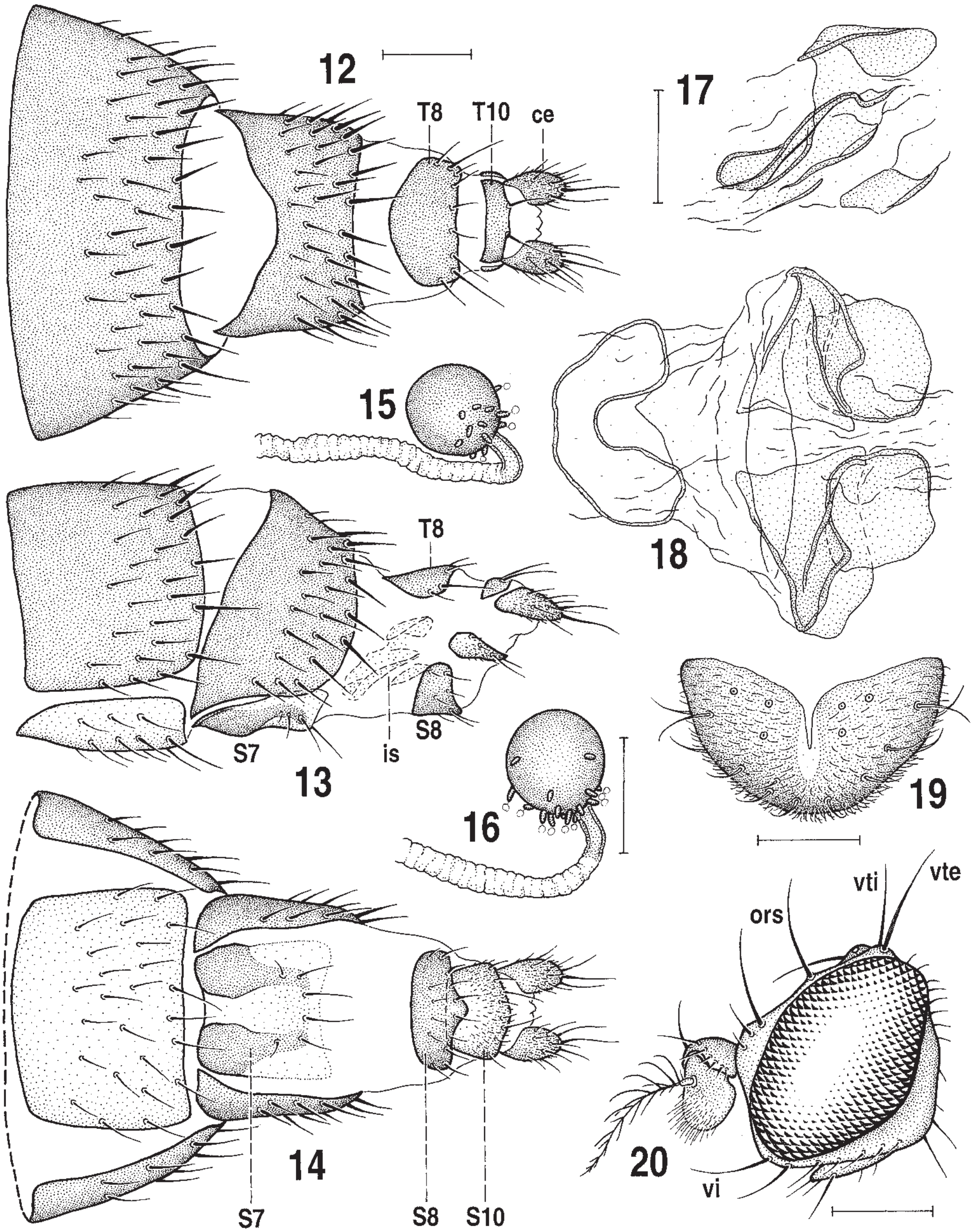
Figs 6–11. *Amygdalops thomasseti* Lamb, male (Israel). 6. Apex of filum, ventral view. 7. Aedeagal complex, lateral view. 8. Hypandrium and associated structures, lateral view. 9. Same, ventral view. 10. Basal part of phallapodeme, dorsal view. 11. Transandrium, caudal view. Scales = 0.05 mm. For abbreviations see text. Illustration according to Roháček & Freidberg (1993).

slender and twisted band-like sclerites, terminating into membranous apex. (65) Ejacapodeme small, with slender digitiform projection.

(66) *Female abdomen*: With broader terga (T2–T6) and narrower sterna (S2–S5). (67) Postabdomen (Figs 12–19) relatively broad and short, terga and sterna (except S6) well sclerotised and dark. (68) T6 and also S6 relatively large. (69) T7 laterally extended and reaching ventral side, usually embedding spiracles; (70) S7 strongly modified, usually narrow and characteristically pigmented, disparate or partly (anteriorly) fused with T7; (71) T8 plate-shaped, small, transversely suboblong; (72) S8 protruding posteromedially, with narrow, postero(dorso)medial incision. (73) Internal sclerotisation of female genital chamber (uterus) developed (Figs 17, 18, 23) but usually weakly sclerotised, formed by 2 pairs of posterior crooked sclerites and (74) 1 anteroventral, transversely compressed, fine ring-shaped sclerite. (75) Anterior part of uterus provided with membranous pouch-like ventral receptacle (Figs 22, 23) having a digitiform or vermicular terminal projection. (76) Accessory glands of usual form, subterminally with slightly dilated ducts. (77) Spermathecae (1+1) spherical to shortly pyriform (Figs 15, 16), with simple but distinct cervix, and with body surface carrying dark, usually short and blunt spinulae with minute stalked pale globules. (78) T10 small, at least partly dark, with 1 or (rarely) 2 pairs of dorsal setae; (79) S10 slightly larger and longer than T10, simple, densely micropubescent besides fine setulae. (80) Cerci relatively short and broad, with comparatively short setae, those on apex thicker than others.

Discussion: The genus *Amygdalops* is best diagnosed by the combination of the character states 2–5, 7, 11, 12, 17, 20, 21, 27, 29, 31, 37, 38, 40, 54–57, 60, 70, 72, 75, 77 and 80. However, some of these features are shared with the recently described Afrotropical genus *Margdalops* and are considered synapomorphic and demonstrating the sister-group relationships of these two genera, viz. 2–4, 12, 17, 27, 29, 39, 40, 75 and 80. The genus *Margdalops* (see Roháček & Barraclough 2003) differs from *Amygdalops* in a number of other features, both plesiomorphic with respect to those in *Amygdalops* (e.g. frontal lunule distinct; arista ciliate; vti long; prs distinct; CuA_1 long; transandrium without medial caudal process; aedeagal part of folding apparatus dorsally membranous; female S7 slightly or unmodified) and autapomorphic (occiput with a pair of silvery microtomentose stripes, dc inserted more anteriorly, wing dark margined anteriorly, dm cell shorter and very narrow, medandrium wide and medially shortened, male cercus strongly sclerotised). Consequently, the monophyly of *Amygdalops* is substantiated by only the following apomorphies, viz. (5) frontal lunule reduced, (7) arista very long pectinate, (11) vti markedly shorter than vte, (20) 1 small prs, (31) wing membrane usually ornamented by dark subapical spot and some whitish areas (with exception of the most primitive species), (38) CuA_1 shortened, (54) transandrium medially with paired caudal process, (55) pregonite fused to hypandrium and posteriorly separated by a narrow notch, (57) aedeagal part of folding apparatus dorsally sclerotised and attached to base of phallapodeme, (70) female S7 strongly modified.

The best diagnostic characters of *Amygdalops* are the characteristic ellipsoid eyes, position of ors and short vti, combined with long pectinate arista, short prs, dc macrosetae in prescutellar position, pleura with dark dorsal band, wing with subapical dark spot, short and narrow dm cell and shortened CuA_1. These are usually sufficient to affiliate a species to *Amygdalops*, with the exception of species with unpatterned wings, such as is *A. trivittatus* whose position is not quite clear because its male is unknown. It is



Figs 12–20. *Amygdalops thomasseti* Lamb, female, male (Israel). 12. Female postabdomen, dorsal view. 13. Same, lateral view. 14. Same, ventral view. 15, 16. Spermathecae. 17. Female internal sclerites (ring-shaped sclerite omitted), lateral view. 18. Same, ventral view. 19. Female S8, caudal view. 20. Male head, lateral view. Scales: Figs 12–14 = 0.1 mm, Fig. 20 = 0.2 mm, others = 0.05 mm. For abbreviations see text. Illustration according to Roháček & Freidberg (1993).

placed in *Amygdalops* because it lacks synapomorphies of the genus *Margdalops* and possesses reduced lunule, long pectinate arista, short vti and prs and also its spermatheca, modified female S7 and ventral receptacle resemble most those of *Amygdalops* species.

In the Afrotropical fauna 11 species of *Amygdalops* have been recognised which are described or redescribed below. However, at least five additional species have been identified in the material examined but these are left undescribed either because only females are available, or in two cases, because single males are damaged which precludes their description. The species are dealt with below according to presumed systematic order based on the suggested relationships.

Amygdalops trivittatus Frey, 1958

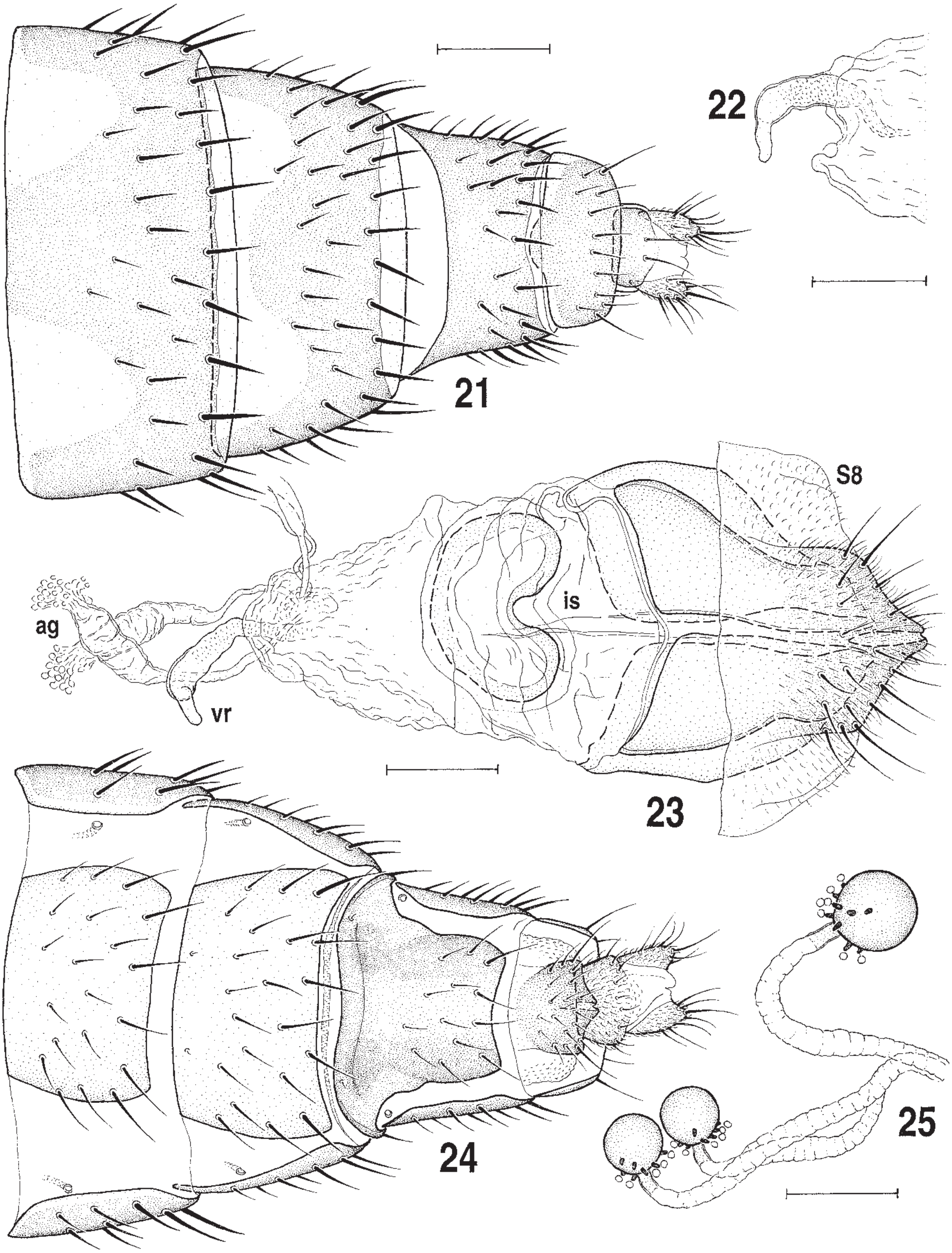
(Figs 21–25, 122)

Amygdalops trivittata Frey, 1958: 32 [description].
Amygdalops trivittatus: Sabrosky 1980: 650 [Afrotropical catalog]; Roháček 1998*a*: 172 [world checklist].

Type material: Holotype female, labelled: 'Ins. Cabo Verde, S. Antão Pombas, 23–26.12.1953, Lindberg', 'Holotypus' (in black frame on red label), 'Holotypus' (red) and 'Amygdalops trivittatus Frey, J. Roháček des. 2002, ♀ Holotypus' (red) (MZHF, genit. prep.).

Description: Male unknown. Female. Total body length 1.67 mm. Body bicolorous, yellow and brown. Head distinctly higher than long. Occiput completely brown. Frons brown except brightly yellow anterior fourth. Frontal triangle relatively broad and with rounded anterior corner, entirely brown and including ocellar triangle shiny. Orbit brown and shiny in posterior two-thirds, yellow and dull anteriorly. Stripes between orbits and frontal triangle densely golden yellow microtomentose. Face, parafacialia (= narrow listel between face and eye), gena and postgena white; parafacialia and gena silvery white microtomentose; mouthparts including palpus whitish yellow. Cephalic chaetotaxy incompletely recognisable, because some setae missing: pvt small but crossed; vti about as long as anterior ors; vte and posterior ors lost but probably strongest of cephalic setae; oc about as long as vti; 2 long ors (the posterior broken off, the anterior relatively short and weak) and only 1 microsetula in front of anterior ors recognised; no microsetae visible medially in front of frontal triangle; 1 long vi and 1 also long subvibrissa (about three-fourths of vi); peristomal setulae few, twice as long as postocular setulae. Eye less oblique than in other congeners; its longest diameter 1.4 times as long as shortest one. Gena narrow, its smallest height 0.1 times as long as shortest eye diameter. Antenna pale yellow but darker around base of arista. Arista 1.9 times as long as antenna, long pectinate.

Thorax slightly narrower than head, bicolorous. Mesonotum with wide medial dark brown band between dorsocentral lines, somewhat widened anteriorly and covering whole scutellum; consequently humeral and notopleural yellow band extended on lateral parts of scutum. Pleura with pale brown band wider posteriorly, strongly tapered anteriorly, covering only vicinity of anterior (mesothoracic) spiracle and with enlarged yellow to whitish yellow ventral part. Thoracic chaetotaxy: 1 hu, 2 npl (anterior almost twice as long as posterior); 1 very small prs; 1 short sa; probably 1 pa (broken off); 2 dc but anterior reduced to small setula, posterior as long as apical sc; 2 sc, apical long, laterobasal very short and weak, hair-like; ppl not visible; probably 2 stpl but only



Figs 21–25. *Amygdalops trivittatus* Frey, female holotype. 21. Postabdomen + 5th segment, dorsal view. 22. Ventral receptacle, lateral view. 23. Genital chamber with internal sclerites and S8, ventral view. 24. Postabdomen + 5th segment, ventral view. 25. Spermathecae. Scales: Figs 21, 24 = 0.1 mm, others = 0.1 mm. For abbreviations see text.

posterior preserved (on holotype), long but fine; other sternopleurals few and fine. Legs yellow to yellowish white. f_1 with few setae in posteroventral row; ventroapical seta on t_2 short but distinct; f_3 without specialised setae, simply setulose. Wing (Fig. 122) relatively short and broad, without dark pattern, membrane uniformly yellowish white. R_{4+5} and M almost parallel in apical third of wing. A_1 and particularly CuA_1 strikingly longer than in all congeners although not reaching wing margin. Anal lobe well developed. Wing measurements: length 1.77 mm; width 0.62 mm, $Cs_3 : Cs_4 = 1.70$, r-m\dm-cu : dm-cu = 3.11. Haltere yellow.

Abdomen. Preabdominal T1–T2 brown, T3–T5 (and also T6) brown with large pale yellow laterobasal spot on each side, that on T4–T6 extended behind middle of tergum (Fig. 21); preabdominal sterna pale yellow, narrow, becoming wider posteriorly, from S4 being distinctly wider than long.

Postabdomen (Figs 21, 24) short and wide. T6 narrower than T5 but with the same pale laterobasal spots. S6 distinctly wider and more transverse than S5, pale yellow to ochreous. T7 narrow, with shallow anterior emargination and dense short and thick setae. S7 very distinctive, heavily sclerotised, dilated anteriorly with strongly expanded anterolateral corners and with a pair of darker longitudinal bands. T8 paler pigmented than T7, plate-shaped, somewhat expanded anteromedially and more or less rounded posteriorly. S8 very narrow (only slightly wider than S10), posteromedially bulging and bent dorsally, and with usual narrow posteromedial incision. T10 short pentagonal, with indistinct unpigmented posteromedial margin, with a pair of longer setae in front of the latter but completely without microtomentum. S10 slightly larger than T10, finely setulose at posterior margin. Internal sclerotisation of genital chamber complex (Fig. 23), distinctly developed though pale pigmented, composed of anterior cordate ring-shaped sclerite and of two pairs of posterior bent sclerites connected with S8. Ventral receptacle (Fig. 22) represented by short, membranous, very slightly clavate tube, with apical ventrally bent digitiform process. Spermathecae (Fig. 25) 2+1 [the paired spermathecae are probably a monstrosity due to secondary splitting of single spermatheca during ontogenesis], all spherical, with few blunt spines or processes on surface of basal half, and with comparatively long sclerotised cervix. Cerci small, comparatively short, with moderately long setosity.

Discussion: *A. trivittatus* Frey, 1958 is an easily recognisable species; it differs from all congeners in the area under study by the unspotted wings, distinctive colour pattern of thorax and the uniquely formed female S7 (see key). Despite the limited set of characters for phylogenetic consideration (because only the female is known) it is apparent that this species accumulates a number of plesiomorphic features which are unknown in other species of the genus, eg. head higher than long, eye slightly oblique, unicolorous wing membrane, relatively broad wing, well developed anal lobe, and long veins A_1 and CuA_1. For this reason *A. trivittatus* is considered a primitive species closest to the ancestor of the genus which represents the sister-group to all other *Amygdalops* species in the Afrotropical Region (cf. Fig. 133).

Biology: Unknown.

Distribution: The species is known only from the female holotype from Santo Antão I. in the Cape Verde archipelago.

Amygdalops thomasseti Lamb, 1914

(Figs 1–20, 46–48, 123)

Amygdalops thomasseti Lamb, 1914: 358, Fig. 39, Pl. 21, Figs 48–51 [description]; Sabrosky 1980: 650 [catalog, partim]; Roháček & Freidberg 1993: 92–98, Figs 64–83, 119 [redescription]; Roháček 1998*a*: 172 [world checklist, distribution], 1999*a*: 194 [biology, distribution].

Type material: Lectotype male (designated by Roháček & Freidberg 1993: 94) labelled: 'Mahe '0.8-9. Seychelles Exp.', 'Seychelles Is., Prof. J. S. Gardiner 1914-537', 'Type ♂ Amygdalops thomasseti C.G.L.', 'Type' (on circular label with red margin), 'Lectotypus " ♂ Amygdalops thomasseti Lamb, Roháček & Freidberg des. 1992'. The specimen is in poor condition, headless, with left wing and some legs missing; its abdomen detached (genit.prep.). Paralectotypes: female (headless) with same labels as the lectotype but with 'Type ♀ Amygdalops thomasseti C.G.L.' and the paralectotype label; female labelled 'Praslin, '08. Seychelles Exp.', 'Seychelles Is., Prof. J. S. Gardiner 1914-537, A. thomasseti Lamb' (all in BMNH).

Other material examined: MADAGASCAR: near Ambilobe, Ankarana, viii.1986, 1 male, S. V. Fowler leg. (NMWC); Andasibe, ca. 19ºS 48ºE, 13–15.x.1987, 1 male, SF McE, JRD, SA leg. (AMSA). MAURITIUS: vii. 1986, 1 female, J. R. David leg. (AMSA). MOZAMBIQUE: (Port East Africa), Luabo, Lower Zambesi River, vi–vii.1957, 1 female, Usher, Stuckenberg leg. (NMSA). SENEGAL: 1 km NE Djibelor, about 7.5 km SW Ziguinchor, UTM 28PCJ5687, loc. 29, swept along roadside in forest, 8.xi.1977, 1 female, Cederholm, Danielsson, Hammarstedt, Hedquist, Samuelsson leg. (Lund Univ. Syst. Dept.: Sweden-Gambia-Senegal Expedition, Nov. 1977, MZLU). SEYCHELLES: Mahe, Beau Vallon, 4.xi.1997, 1 female, J. David & L. Tsacas leg. (Mission Seychelles C.N.R.S.-R.C.P. 318, Novembre 1977) (BMNH). SOUTH AFRICA: Tongaland, Ingwavuma District, Ndumu Reserve, 1–10.xii.1963, 2 females, B. & P. Stuckenderg leg.; Natal, 6 miles S. of Pongola, 6.vi.1967, 2 females, South Africa Govn. Ent. leg. (NMSA); SW Africa, Swakopmund, general sweeping, 26–30.i.1972, 1 male 1 female, South African Exp. leg. (BMNH). UGANDA: S.W., Semiliki Forest, 1250 m, 8.i.1996, 6 males 2 females, I. Yarom & A. Freidberg leg. (TAUI, SMOC). Almost all specimens with genit. prep.

Description: Male. Total body length 1.67–2.37 mm. Body bicolorous, yellow and brown. Head somewhat longer than high, angular in profile (Fig. 20). Frons narrow because of large convex eyes (Fig. 1). Occiput pale brown, with paler postocular stripes. Frontal triangle narrow, reaching to anterior third of frons, brownish (including ocellar triangle) and rather shining. Anterior third of frons medially also ochreous to brown but usually paler than frontal triangle. Orbits yellowish brown to yellow (anteriorly), with whitish silver microtomentum reaching to posterior ors. Frontal lunule reduced. Face yellowish ochreous, narrow margin in front of eye and gena whitish yellow and with silvery white microtomentum. Cephalic chaetotaxy: pvt distinct, short but strongly convergent or crossed; vti long but shorter than vte; oc yet shorter and thinner than vti; 2 long ors and 2 small setulae in front of anterior ors (Fig. 20); several microsetulae in front of frontal triangle; 1 long vi and 1 subvibrissa (about two-thirds of vi); a row of short peristomal setulae; also postocular setulae very short; palpus with 1 distinct seta. Mouthparts yellow. Eye very convex, elongately ellipsoid; its longest diameter about 1.6 times as long as shortest one. Gena anteriorly very narrow but widened posteriorly; its smallest height about 0.05 times as long as shortest eye diameter. Antenna knee-like bent; pedicel somewhat brownish ochreous and overlapping base of 1st flagellomere which is brownish around base of arista, otherwise yellowish white and long whitish ciliate on anterior corner. Arista about 1.8 times as long as antenna, very long pectinate, particularly dorsally (Fig. 20).

Thorax narrower than head, bicolorous, brown to reddish brown and yellow. Mesonotum (Fig. 1) brown except for two yellow to orange longitudinal stripes sometimes reaching up to scutellum but usually ending in front of it. Anteriorly these stripes can be widened and medially connected but in dark form (see below) these stripes are reduced and darkened, often poorly visible in foremost part of mesonotum only. Scutellum and postscutellum brown. Humeral and notopleural areas yellow; a narrow longitudinal stripe covering dorsal part of pleura (from propleuron to haltere) brown; rest of pleura yellow to whitish yellow. Thoracic chaetotaxy (see Fig. 1): 1 hu, 2 npl (anterior longer); 1 small prs; 1 weak sa and 1 longer pa; 2 dc but anterior only as long as sa, posterior very long; 4 rows of ac microsetae on suture; 2 sc, the long apical somewhat shorter than posterior dc; ppl indistinct; 2 stpl, the anterior shorter; ventral part of sternopleuron (katepisternum) with relatively short hair-like setae. Scutellum rounded triangular having slightly convex dorsal surface. Legs yellow to pale ochreous, coxae and trochanters whitish yellow. f_1 lacking ctenidial spine but bearing a row of posteroventral setae (usually 5 of them long) and a row of much shorter posterodorsal setae. t_2 with usual ventroapical seta. f_3 with a long row of posteroventral setae (15–18) becoming shorter and thicker distally (Fig. 5). Wing (Fig. 123) narrow, with pale brownish membrane ornamented by whitish area between C and R_{4+5}, darker brown diffuse areas along R_{4+5}, M and CuA_1 but mainly (darkest spot) at apices of R_{2+3} and R_{4+5}. Veins yellowish brown. C without distinct spinulae. R_{2+3} slightly diverging from C, apically upcurved to it and ending relatively far from apex of R_{4+5}. R_{4+5} and M slightly divergent but apically convergent again. Discal cell short and narrow; r-m situated in its middle. CuA_1 and A_1 not reaching wing margin. Alula very narrow. Wing measurements: length 1.74–2.28 mm; width 0.52–0.75 mm, $Cs_3 : Cs_4$ = 2.15–2.63, r-m\dm-cu : dm-cu = 2.44–3.00. Haltere normally yellow, with paler knob, more rarely with knob somewhat darkened, ochreous brown.

Abdomen: Terga wide, brown to dark brown (darker than mesonotum) except for T1 having laterodorsal pale ochreous spot on each side. T1–T5 large, with short setae. T6 reduced, weakly sclerotised and unpigmented, without setae. Sterna (S1+2 – S5) simple, narrow, pale yellow, with finer setulae than associated terga. S6–S8 asymmetrical, dark like preabdominal terga or epandrium, all dorsally fused. S6 (situated ventrolaterally) transversely strip-like, with somewhat widened dorsal portion; S7 situated on left side of postabdomen, about twice longer than dorsal part of S6; S8 long, longer than epandrium, situated quite dorsally.

Genitalia: Epandrium (Figs 2, 4) rather small compared to internal genitalia, relatively sparsely setose and with a pair of longer setae. Cercus prominent, comparatively large. Medandrium (Fig. 4) not wide, of medium size. Gonostylus (Figs 3, 47) proximally wide, distally tapered and with 1 preapical anterior tooth and narrow but not acute apex; its outer side with scarce setulae and distinct micropubescence; the majority of setae are on its inner side. Hypandrium not very robust but long (Figs 8, 9), with membranous internal lobes; transandrium posteriorly with 2 sclerites (Fig. 11) representing divided caudal process. Pregonite (Figs 8, 9) basally fused with hypandrium, apically slender and projecting posteriorly, with several (5–6) setae. Postgonite (Figs 8, 9) slender, apically acute and bearing 1 anterior seta in its middle; basal sclerite attached to postgonite weakly sclerotised but distinct. Aedeagal part of folding apparatus attached to base of phallapodeme (Fig. 7, afa) dorsally dark, ventrally provided with sclerotised lenticular grains; connecting sclerite pale pigmented, elongate. Basal membrane (Figs 8, 11, bm) distinctively sculptured by dense, transversely arranged, tuberculiform spines. Aedeagal complex (Fig. 7) with robust phallapodeme having bifurcate base (Fig. 10). Aedeagus with short phallophore and rather large distiphallus which is composed of voluminous, densely setulose saccus (Fig. 7) and of slender twisted filum formed by 2 stripe-like sclerites. Apex of filum (Fig. 6) membranous, with 2 very thin sclerotised stripes. Ejacapodeme small, with slender projection (Fig. 7).

Female differs from male as follows:

Total body length 2.02–2.70 mm.

Occiput often paler than in male, yellowish brown. f_3 posteroventrally simply finely setulose. Wing measurements: length 2.12–2.74 mm, width 0.65–0.87 mm, $Cs_3 : Cs_4$ = 2.04–2.65, r-m\dm-cu : dm-cu = 2.37–2.94. Abdomen with brown to reddish brown terga but T1 with pale spots in posterior corners and T4 and T5 with a pale spot on each side of their dorsal surface; size of these pale spots rather variable; sometimes they are small and invisible in dry specimens. Dark variety (see below) without pale spots on preabdominal terga. Preabdominal sterna (S1–S5) pale yellowish ochreous, becoming wider posteriorly, S5 slightly narrower than S6.

Postabdomen (Figs 12–14, 46) relatively short and wide. T6 wide, reaching on ventral side of abdomen. S6 comparatively wide, not narrower than preceding sterna, pale ochreous, in dark specimens with brownish posterior margin. T7 narrow, dorsomedially short because of anterior emargination, with dense short and thick setae. S7 with distinctive bipartite pigmentation (Figs 14, 46), poorly defined posterior margin and only few thin setae in posterior half. T8 dark, transverse, plate-shaped and more or less rounded anteriorly. S8 also dark, short, posteriomedially bulging and with distinct narrow posteromedial incision (surrounded by unpigmented area) only visible in caudal view (Fig. 19). T10 very short and transverse, dark like T8 and with a pair of longer setae on posterior margin. S10 much longer but paler than T10, with a row of setulae at posterior margin. Internal sclerotisation of genital chamber complex (Figs 17, 18), weakly sclerotised, pale pigmented, composed of anterior faint ring-shaped structure (Fig. 18) and several twisted posterior sclerites of indefinite shape. Ventral receptacle (Fig. 48) membranous, slightly clavate subterminally, apically projecting in subventrally directed digitiform process. Spermathecae (Figs 15, 16) ball-shaped, with short blunt spines or processes on surface of basal half, and with comparatively long sclerotised cervix. Cerci (Fig. 12) comparatively short and robust, with moderate setosity.

Variability: The species is widespread in the Afrotropical region and southern Palaearctic areas which probably resulted in considerable variability of colour features. The most different from typical specimens is the dark form found in Uganda and Madagascar, which has more darkened frons, the longitudinal light stripes on mesonotum markedly reduced to almost invisible and the pale spots on female preabdominal terga very small or absent. There is a distinct variability in the pigmentation and setosity of the female

S7 (cf. Figs 14 and 46) and also in the outline of the male gonostylus (cf. Figs 3 and 47); more slender gonostylus was also found in some specimens from South Africa and Madagascar. No distinct differences were observed in the male aedeagal complex of the dark form versus typical one and therefore the dark specimens are considered conspecific with *A. thomasseti*.

Discussion: *A. thomasseti* Lamb, 1914 together with *A. obtusus* sp.n., *A. simplicior* sp.n., *A. major* sp.n., *A. acer* sp.n. and *A. nigrinotum* Sueyoshi & Roháček, 2003, forms a separate group which can be recognised by wing pattern characterised by subapical dark spot and (usually) pale narrow area between C and R_{4+5}. This character is however, plesiomorphic. The only true synapomorphy of this group, the shortened, frame-like phallophore, is rather weak and, consequently the monophyly of this group is not quite definite. *A. thomasseti* together with *A. obtusus* sp.n., forms a sister-pair of externally very similar species (including structures of frons and wing pattern), which are safely distinguished only by characters of the male and female genitalia. However, *A. thomasseti* has usually (except for darkest specimens) some of female preadominal terga ornamented with yellow or ochreous spots while the female of *A. obtusus* sp.n. has terga normally uniformly brown.

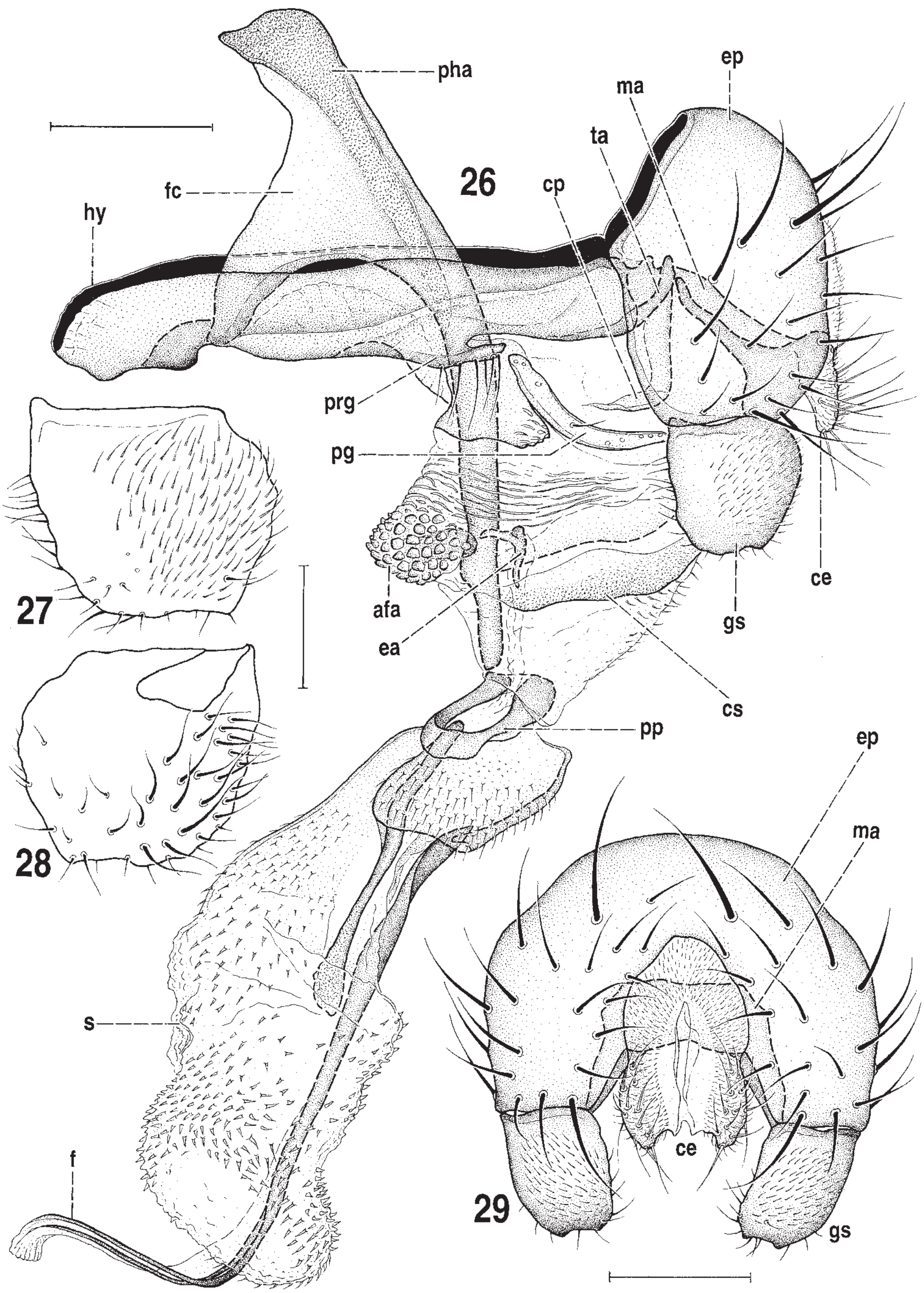
Biology: Poorly known. In the southern Palaearctic areas adults occur from March to December (Roháček & Freidberg 1993; Roháček 1999*a*) and are usually found in marshy habitats, particularly in those with growths of *Arundo donax*, *Phragmites australis* and *Scirpus maritimus* along freshwater streams and canals in coastal areas. Sometimes they were also caught in light and Malaise traps and on decaying fruits (Roháček & Freidberg 1993). Records from Afrotropical Region are based on flies captured from April to January, usually by sweeping vegetation.

Distribution: *A. thomasseti* is widespread in the Afrotropical and southern Palaearctic Regions (see Roháček & Freidberg 1993; Roháček 1999*a*). In the Afrotropical Region and adjacent areas it has been reliably recorded only from Seychelles (Lamb 1914; confirmed by a new record here) and Oman (Roháček & Freidberg 1993) because other published records (Sabrosky 1980) were apparently based on other species as no true *A. thomasseti* was found among *Amygdalops* material studied by C. Sabrosky in USNM (examined). The new Afrotropical records are as follows: Senegal, Uganda, Mozambique, South Africa, Madagascar, Mauritius.

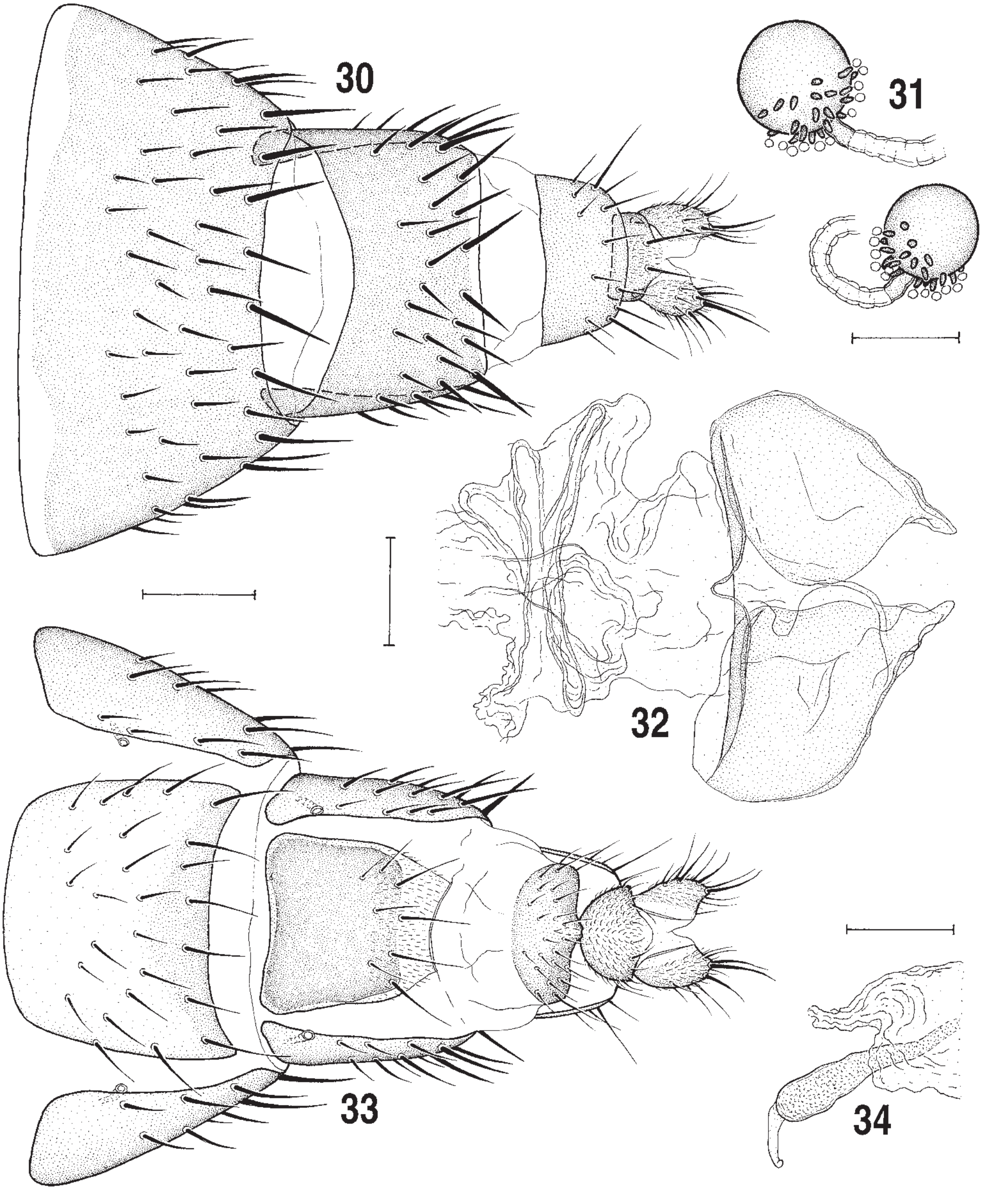
Amygdalops obtusus sp. n.

(Figs 26–34, 124)

Type material: Holotype male labelled: ‘KENYA, Rt. A109, Hunter’s Lodge, 30.iv.–2.v.91, A. Freidberg & Fini Kaplan’ (TAUI, genit. prep.). Paratypes: CAMEROON: Rt. N4, 120 km NW Yaounde, 5.xi.1987, 1 male, A. Freidberg leg. (TAUI). GAMBIA: River Tanji 3 km SW Brufut, UTM 28PCK087773, loc. No. 9, at light, 28.ii.1977, 1 female, Cederholm, Danielsson, Larsson, Mireström, Norling, Samuelsson leg. (Lund Univ. Syst. Dept. Sweden Gambia/Senegal Febr.–March 1977 Expedition, MZLU). GHANA: Legon, 1.ix.1988, 1 male 4 females, J. den Hollander leg. (NMWC, SMOC). KENYA: same data as for holotype, 1 male 1 female (TAUI, SMOC); Tsavo West, Ngulia Lodge, 16–17.viii.1983, 1 male, A. Freidberg leg. (TAUI). LIBERIA: Suakoko,



Figs 26–29. *Amygdalops obtusus* sp.n., male paratype (Kenya). 26. Genitalia, erect position, lateral view. 27. Gonostylus, outer side, sublateral view (widest extension). 28. Same, inner side. 29. External genitalia, caudal view. Scales: Figs 27–28 = 0.05 mm, others = 0.1 mm. For abbreviations see text.



Figs 30–34. *Amygdalops obtusus* sp.n., female paratype (Kenya). 30. Postabdomen, dorsal view. 31. Spermathecae. 32. Internal sclerites, ventral view. 33. Postabdomen, ventral view. 34. Ventral receptacle, lateral view. Scales: Figs 30, 33 = 0.1 mm, others = 0.05 mm.

3.v.1952, 1 male, C. C. Blickenstaff leg. (USNM). NIGERIA: Ibadan, lush vegetation by river, 16–19.i.1966, 1 male, J. C. Deeming leg. (USNM). SOUTH AFRICA: Natal, 10 km NE Drummond, 18.ix.1983, 1 male, A. Freidberg leg. (TAUI); Natal, Pietermaritzburg, Scottsville, malaise trap, 8–14.iv., 1 male, 15–21.iv., 1 male 1 female, 22–30.iv., 1 male, 13–19.v., 1 female, 20–26.v., 1 male, 27.v.–2.vi.1986, 1 female, R. M. Miller leg. (NMSA, SMOC); Natal, Ukulinga Res. Frm., 10 km SE Pietermaritzburg, grassland, malaise trap, 7–13.iii.1986, 1 female, R. M. Miller leg.; Natal, 6 miles S of Pongola, 6.vi.1967, 1 male 2 females, Natal South Africa Govn. Ent. leg. (all NMSA); TANZANIA: Ngorongoro Res. Gate, 1500 m, 6.ix.1992, 1 male, A. Freidberg leg. (TAUI); UGANDA: S.W., Kabale-Ketuna Rd., 1900 m, 23.xii.1995, 2 females, I. Yarom & A. Freidberg leg. (TAUI); ZAIRE (REPUBLIC CONGO): Parc National Albert, Mont Hoyo, 1 280 m, sur plantes basses, 7–15.vii.1955, 1 female, P. Vanschuytbroeck leg. (MRAC). Almost all paratypes with genit. prep.

Etymology: The specific name ‘obtusus’ (= Lat. obtuse, blunt) is derived from the short and blunt male gonostylus.

Description: Male.

Externally closely resembling *A. thomasseti*, including colour. Total body length 1.90–2.38 mm.

Head: Slightly to distinctly longer than high. Frons narrow as in *A. thomasseti*; occiput brown with somewhat paler postocular stripes or also adjacent areas. Frontal structures similarly shaped, coloured and microtomentose as in *A. thomasseti* but usually darker (as in dark form of the latter species). However, there are also lightly coloured specimens resembling in this respect typical form of *A. thomasseti*. Gena darker, yellow and less densely microtomentose. Cephalic chaetotaxy similar to that of *A. thomasseti*: pvt short with apices medially meeting or crossed; vti long, slightly to distinctly shorter than vte (vte longest of cephalic setae); oc usually shorter and thinner than vti; 2 strong ors (anterior usually shorter, posterior often almost as long as vte) and 2 microsetulae in front of anterior ors (the anterior microsetula only half length or less of posterior); microsetulae (1–2 pairs) medially in anterior third of frons very minute and often indistinct; 1 long vi and 1 subvibrissa (distinctly shorter than vi). Palpus as in *A. thomasseti*. Longest eye diameter about 1.5–1.6 times as long as shortest; gena very low (narrow) anteriorly, with its smallest height only 0.07 times as long as shortest eye diameter. Antenna as in *A. thomasseti*, with darker (brownish ochreous) pedicel and vicinity of arista. Arista about 2.2 times as long as antenna, very long pectinate, mainly dorsally.

Thorax: Similarly coloured as in *A. thomasseti*, including a pair of orange ochreous stripes covering dorsocentral lines, sometimes extending to posterior dc and often anteriorly dilated and almost meeting medially and laterally connected with humeral-notopleural yellow band. Thoracic chaetotaxy: 1 very small prs; 2 dc, anterior short and weak, posterior as long as apical sc; 2 sc, apical very long, basal weak, about as long as anterior dc; ppl indistinct or absent; 2 stpl, anterior markedly shorter, as long as fine setae on ventral part of sternopleuron. Scutellum as in *A. thomasseti*, slightly convex. Legs yellow to pale ochreous, with same chaetotaxy as in *A. thomasseti*. Wing pattern agreeing perfectly with that of *A. thomasseti* and venation also very similar. Wing measurements: length 1.90–2.38 mm; width 0.57–0.73 mm, $Cs_3 : Cs_4 = 2.14–3.06$, r-m\dm-cu : dm-cu = 2.67–3.28. Haltere yellow, knob often paler.

Abdomen: T1 and T2 brown, but with small pale lateral spot lying on boundary of T1 and T2 (in very light specimens more extended to basal half of T2). T2–T5 normally uniformly brown, rarely T5 with small, pale pigmented laterobasal spot on each side. Preabdominal sterna all pale yellow to ochreous, becoming broader posteriorly, S5 the widest. Postabdominal sterna (S6–S8) very similarly formed as in *A. thomasseti*.

Genitalia: Epandrium (Figs 26, 29) small, sparsely setose, with pair of longer setae dorsomedially. Cercus smaller than in *A. thomasseti*. Medandrium (Fig. 29) relatively low and pale. Gonostylus (Figs 27, 28) short and broad, rounded subquadrate, apically blunt and with small tubercles, outer surface of gonostylus without macrosetae but with dense micropubescence covering its posterior two-thirds; inner surface (Fig. 28) with numerous setae in its anteroventral half. Hypandrium (Fig. 26) similar to *A. thomasseti*, with membranous internal lobes; transandrium also similar but more strongly bent dorsomedially and both sclerites representing divided caudal process more curved laterally in distal third. Pregonite (Fig. 26) fused with hypandrium but somewhat separated posteriorly by narrow notch, with 5–6 setae. Postgonite (Fig. 26) slender, slightly bent, apically tapered but not acute and bearing 1 anterolateral seta in its middle; basal sclerite attached to postgonite darker pigmented and ventrally dilated in contrast to that of *A. thomasseti*. Aedeagal part of folding apparatus at base of phallapodeme (Fig. 26, afa) armed by tuberculiform spines and elongate ribs; connecting sclerite (Fig. 26, cs) partly brownish, relatively broad. Basal membrane similarly sculptured as in *A. thomasseti*, with transversely formed and arranged tuberculiform spines. Aedeagal complex (Fig. 26) with phallapodeme having bifurcate base. Aedeagus with short frame-like phallophore and large distiphallus. Saccus of distiphallus voluminous (particularly in erect position), armed by dense short thick spines in apical half and by fine short setulae in basal half (Fig. 26). Filum of distiphallus formed by 2 stripe-like twisted sclerites and its apex largely membranous. Ejacapodeme small, with slender projection.

Female. Differs from male as follows:

Total body length 2.06–2.50 mm.

Occiput usually paler than in male, sometimes largely yellowish except for medial brownish ochreous part. Longitudinal orange stripes on mesonotum usually short, reaching to suture, only in pale specimens longer. f_3 posteroventrally simply setulose, without short thickened setae. Wing measurements: length 1.98–2.78 mm, width 0.61–0.85 mm, $Cs_3 : Cs_4$ = 2.00–3.21, r-m\dm-cu : dm-cu = 2.36–3.50. Abdomen with preabdominal terga uniformly brown (as in dark form of *A. thomasseti*), with a pale lateral spot (variable in size) on each side of boundary area between T1 and T2. Preabdominal sterna (S1–S5) pale yellowish ochreous, becoming wider posteriorly.

Postabdomen (Figs 30, 33). T6 markedly broader than T7, tapered posteriorly, dark brown, at most its anterior margin pale ochreous. T6 and T7 with dense, short but thick setae. S6 wider than S5, pale yellow but always with distinctly brownish darkened band (maximally covering one-third of sclerite) at posterior margin. T7 narrow, with shallow anterior emargination, dark brown. S7 with simple dark pigmentation in anterior three-fourths, unpigmented microtomentose posterior fourth and only few thin setae in posterior half. T8 dark, plate-shaped, longer and with more setae than in *A. thomasseti*, with straight anterior margin and more or less rounded posterior one. S8 also dark, very similar to that of *A. thomasseti*. T10 small, relatively narrow and distinctly longer (less transverse) than in *A. thomasseti*, pale pigmented posteriorly and with a pair of longer setae. S10 similar to that of *A. thomasseti* but anteriorly more rounded and covered by distinctive micropubescence. Internal sclerotisation of genital chamber composed of posterior well developed and pale brown sclerites (see Fig. 32) and anterior unpigmented ring-shaped structure of very indefinite, somewhat transversely twisted shape. Ventral receptacle (Fig. 34) very similar to that of *A. thomasseti*, with apical projection less strongly curved ventrally. Spermathecae 1+1 (Fig. 31) ball-shaped, one spermatheca distinctly larger than the other, each with short blunt spines as in *A. thomasseti*, but with shorter cervix. Cerci as in *A. thomasseti*.

Discussion: *A. obtusus* sp.n. is extremely similar to *A. thomasseti* in external features. Because of great colour variability of both species (and of *A. thomasseti* in particular) this new species cannot be reliably separated from *A. thomasseti* unless male or female genitalia are examined. However, the genital structures are distinctive so that *A. obtusus* sp.n. can safely be recognised from among all congeners by the short blunt gonostylus of the male or the shape and pigmentation of S7 and T10 of the female. Other specific characters of *A. obtusus* sp.n. are: saccus with very short and dense spinulae and setulae, apex of filum of distiphallus membranous but dilated, posterior internal sclerites of female genital chamber compact, and ring-shaped structure reduced.

Biology: Adult flies were collected in all months except for October. A few data refer to specimens swept from grassland vegetation or lush vegetation by rivers. Some specimens were caught by means of Malaise traps in grassland.

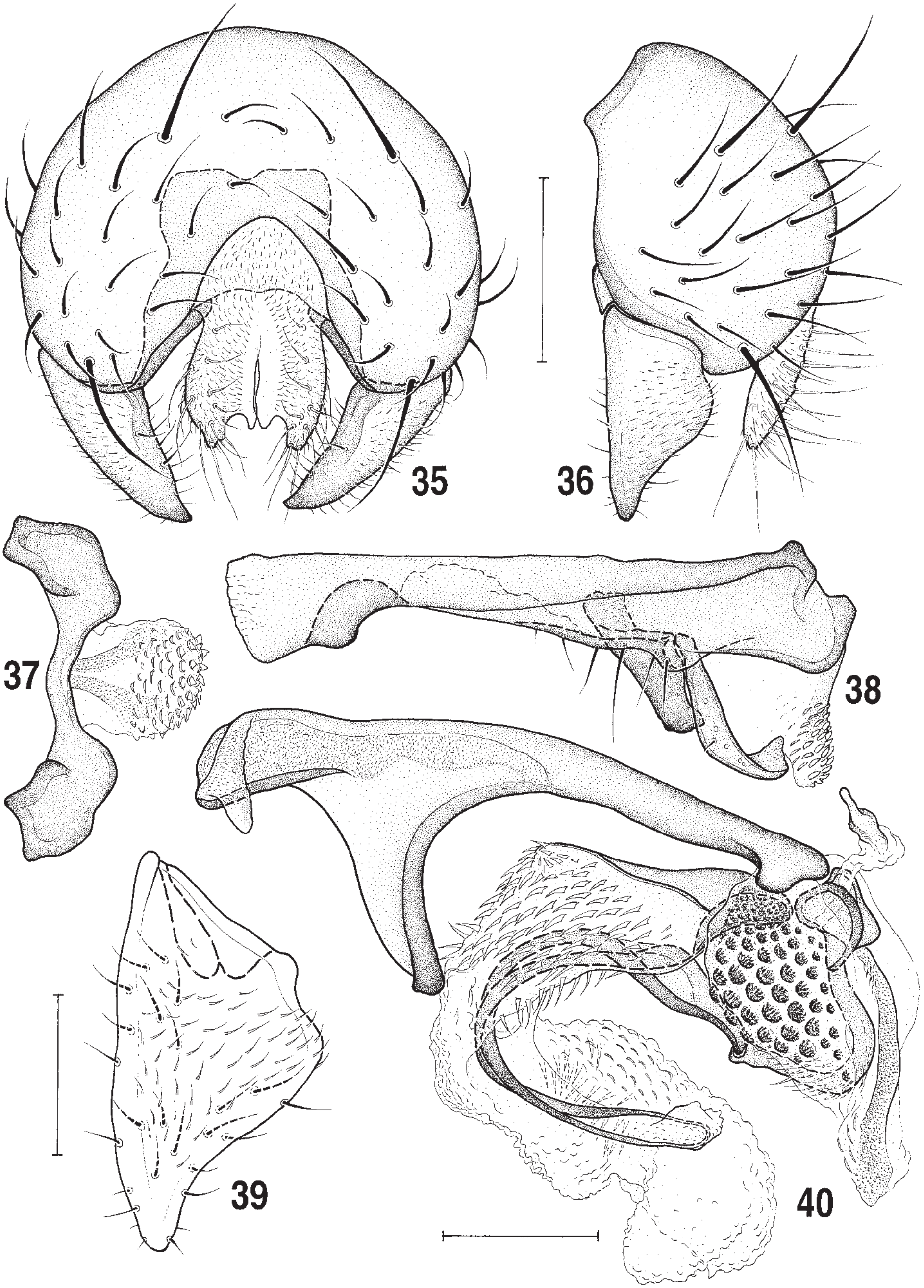
Distribution: The species seems to be widespread throughout tropical Africa. There are records from Liberia, Gambia, Ghana, Nigeria, Cameroon, Zaire (Republic Congo), Kenya, Uganda, Tanzania and South Africa.

Amygdalops simplicior sp. n.

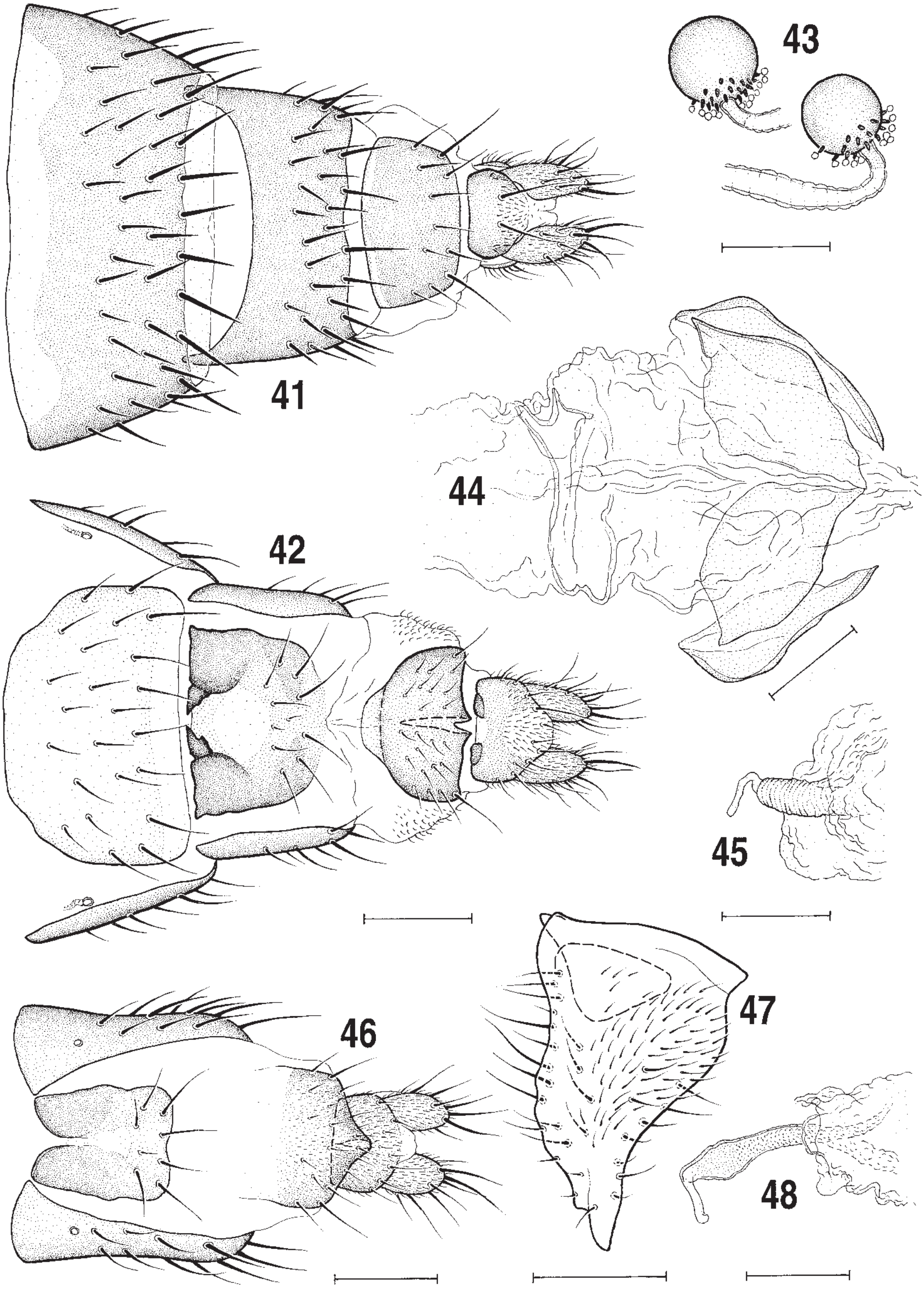
(Figs 35–45, 125)

Type material: Holotype male labelled: 'N. NIGERIA: Nr. Kafanchan, Kagoro Forest, 13.xi.1976, J. C. Deeming' leg. (NMWC, genit. prep.). Paratypes: CAPE VERDE Is.: São Jorge dos Orgãos, ix. 1988, 5 males 6 females, A. van Harten leg. (NMWC, SMOC). MALI: Yanfolila, 19.ix.–7.x.1986, 1 female, J. Durham leg. (NMWC). N. NIGERIA: Zaria, Samaru, m.v.trap, 13.v.1966, 1 female; 9.viii.1966, 1 female; 27.viii.1966, 1 male; 5.ix.1966, 1 male 1 female, J. C. Deeming leg. (USNM); same locality, m.v.trap, ix. 1970, 1 male 3 females; vi. 1979, 1 female; vii. 1979, 1 male 2 females; viii.1979, 1 male, J. C. Deeming leg. (NMWC); W. State, Ibadan, 16.v.1969, 1 male 1 female in copula, J. T. Medler leg. (NMWC, a very immature pair with faded wing pattern). SENEGAL: 1 km NE Djibelor, about 7.5 km SW Ziguinchor, UTM 28PCJ5687, loc. 29, swept along roadside in forest, 8.xi.1977, 1 female, Cederholm, Danielsson, Hammarstedt, Hedquist, Samuelsson leg. (Lund Univ. Syst. Dept.: Sweden-Gambia-Senegal Expedition, Nov. 1977, MZLU). SIERRA LEONE: Mokunji, 130 m, 250 km de la côte, 12.i.1972, 1 female, P. Pfauner leg. (MHNG). UGANDA: Serere, 22.ix.1972, 1 female (in glycerine), J. L. Overman leg. (NMWC). Most paratypes with genit. prep.

Etymology: The species is named 'simplicior' (= Lat. more simple) because the wing pattern and the shape of the male gonostylus are more simple than in the related species.



Figs 35–40. *Amygdalops simplicior* sp.n., male paratype (Cape Verde). 35. External genitalia, caudal view. 36. Same, lateral view. 37. Transandrium, caudal view. 38. Hypandrium and associated structures, lateral view. 39. Gonostylus, sublateral view (widest extension). 40. Aedeagal complex, lateral view. Scales: Fig. 39 = 0.05 mm, others = 0.1 mm.



Figs 41–45. *Amygdalops simplicior* sp.n., female paratype (Cape Verde). 41. Postabdomen, dorsal view. 42. Same, ventral view. 43. Spermathecae. 44. Internal sclerites, ventral view. 45. Ventral receptacle, lateral view.

Figs 46–48. *Amygdalops thomasseti* Lamb, male, female (Uganda). 46. Female postabdomen without 6th segment, ventral view. 47. Gonostylus, sublateral view (widest extension). 48. Ventral receptacle, lateral view. Scales: Figs 41, 42, 46 = 0.1 mm, others = 0.05 mm.

Description: Male.

Total body length 1.39–2.06 mm. Body bicolorous, brown and yellow.

Head: Slightly to indistinctly longer than high. Frons somewhat broader than that of *A. thomasseti*. Entire occiput brown to dark brown. Posterior two-thirds of frons brown (including orbits), anterior third yellow. Frontal triangle narrow, shining, reaching to anterior half to third of frons and surrounded by dull, sparsely whitish microtomentose stripes. Orbits subshining and very sparsely microtomentose, dark brown except for anterior third yellow to yellowish white. Face ochreous, medially usually darker; anterior margin in front of eye and gena whitish yellow, silvery white microtomentose. Cephalic chaetotaxy: pvt small but crossed; vti markedly shorter than vte; oc about as long as vti; 2 long ors (posterior usually longer) and 2 (rarely only 1) small setulae in front of anterior ors; 1–2 pairs of medial microsetulae in anterior third of frons, often strongly reduced to invisible; 1 long vi and 1 (usually shorter) subvibrissa; a single row of short peristomal setulae. Palpus yellow with 1 distinct seta. Eye strongly convex, its longest diameter about 1.5–1.6 times as long as shortest one. Smallest height of gena about 0.1 times as long as shortest eye diameter. Antenna yellow to orange yellow, only outer side of 1st flagellomere darkened, particularly around base of arista. Arista about 1.6–1.7 times as long as antenna, long pectinate as in *A. thomasseti*.

Thorax: Bicolorous, brown or dark brown and yellow. Mesonotum brown, at most posterolateral parts of mesonotum somewhat paler and scutellum darker brown; humeral and notopleural areas up to wing base yellowish ochreous; pleural part of thorax dorsally (from propleuron to haltere) with brown to pale brown (ventrally) longitudinal narrow band, otherwise yellow. Thoracic chaetotaxy: 1 small prs; 2 dc but anterior reduced, only as long as prs, posterior dc very long; 2 sc, apical as long as posterior dc, basal short and weak; 1 ppl, reduced to microseta or indistinct; 2 stpl, anterior shorter; ventral setae on sternopleuron about as long as anterior stpl but very fine. Scutellum distinctly convex. Legs uniformly yellow to yellowish ochreous. Chaetotaxy of legs as in *A. thomasseti*. f_3 with long row of posteroventral setae (14–17) which are shortened and thickened in distal third of femur. Wing (Fig. 125) distinctly paler than that of *A. thomasseti*, including subapical dark spot at apex of R_{2+3}. Wing membrane relatively uniformly pale brown tinged, thus without paler areas, only the subapical spot darker brown. R_{4+5} and M subparallel or basally and apically very slightly convergent, never sinuous. Other veins as in *A. thomasseti*. Wing measurements: length 1.55–2.08 mm; width 0.46–0.64 mm, $Cs_3 : Cs_4$ = 2.06–2.35, r-m\dm-cu : dm-cu = 2.92–3.80. Haltere pale yellow or knob dirty whitish.

Abdomen: Preabdominal terga dark brown, only T5 with pale yellow laterobasal spot of variable size on each side. T6 small, membranous, bare. Preabdominal sterna somewhat broader than those of *A. thomasseti*, becoming broader posteriorly (S5 the widest); all pale yellow or ochreous and finely setulose. S6–S8 dark brown as epandrium, similarly formed as in *A. thomasseti*.

Genitalia: Epandrium hemispherical (Figs 35, 36), sparsely setose, with a pair of longer setae dorsomedially; anal opening small. Cercus relatively long. Medandrium (Fig. 35) relatively narrow. Gonostylus (Fig. 39) simply subtriangular, tapered distally but apex not acute; most of its outer side covered by sparse micropubescence; inner side of gonostylus with longer setae, mainly in anterior half. Hypandrium (Fig. 38) moderate in size, with low membranous internal lobes; transandrium (Fig. 37) relatively narrow, with sclerites of caudal process rather short, slender, almost meeting dorsally and divergent ventrally. Pregonite (Fig. 38) fused with hypandrium, little projecting ventrally but rather incurved, each with 6–7 setae, 1 of them long. Postgonite (Fig. 38) slender, distally somewhat bent inside, with cut apex and 1 small anterolateral setula in the middle; basal sclerite attached to postgonite dark, strongly sclerotised and ventrally projecting. Aedeagal part of folding apparatus attached to base of phallapodeme (Fig. 40) armed by flat, dark granulose tubercles; connecting sclerite slender, with fine granulose pigmentation. Basal membrane armed by short broad spines (Figs 37, 38). Aedeagal complex (Fig. 40) with phallapodeme having bifurcate base and expanded, laterally projecting apex. Aedeagus with small frame-like phallophore and large, ventrobasally spinulose distiphallus. Saccus of distiphallus voluminous (particularly in erect position), armed by two groups of dense spines (in the middle and subapically), apically only finely tuberculate. Filum of distiphallus formed by 2 dark stripe-like twisted sclerites (proximally relatively robust) and largely membranous at somewhat dilated apex. Ejacapodeme small, with usual slender projection.

Female differs from male as follows:

Total body length 1.55–2.38 mm.

Frons anteriorly often darker than in male, medially brownish, thus only anterior third of orbit yellow. f_3 posteroventrally simply finely setulose. Wing measurements: length 1.67–2.30 mm, width 0.48–0.71 mm, $Cs_3 : Cs_4$ = 1.80–2.47, r-m\dm-cu : dm-cu = 2.94–3.91. Abdomen with dark brown preabdominal terga, only T3–T5 with yellowish ochreous laterobasal spot on each side; these pale spots are variable in size and often poorly visible in dry specimens. Preabdominal sterna pale yellow, becoming broader posteriorly, S5 only slightly narrower than S6.

Postabdomen (Figs 41, 42). T6 with pale transverse area (sublaterally somewhat dilated) at anterior margin, otherwise brown. Both T6 and T7 with thick short setae, restricted to posterior half of sclerites. S6 as wide as T7 and somewhat darker pigmented than S5, particularly in posterior half. T7 narrower than T6, with anterior emargination, medially short, all dark brown. S7 with characteristic pattern, composed of unpigmented central spot, a pair of very dark anteromedial cuspidate structures inserted on dark anterior corners and less dark, finely setose posterior third. T8 dark, plate-shaped, longer than in *A. thomasseti*, with less rounded posterior corners. S8 dark, distinctly longer than that of *A. thomasseti*, mediodorsally with narrow deep incision. T10 small but relatively long, with a pair of long setae in the middle and microtomentum restricted to posterior unpigmented part. S10 slightly wider than T10, with a pair of small dark spots at anterior margin and with micropubescence mainly on posterior, somewhat tapered part. Internal sclerotisation of genital chamber composed of 2 pairs of twisted pale pigmented sclerites (see Fig. 44); anterior ring-shaped structure indefinite, membranous, hardly visible. Ventral receptacle (Fig. 45) membranous, formed by broader ringed bag and slender, curved, digitiform terminal projection. Spermathecae (1+1) ball-shaped (Fig. 43), subequal in size, each with very small dark spines inserted on basal third around duct insertion; duct cervix well developed, medium-long. Cerci robust, shortly setose.

Discussion: *A. simplicior* sp.n. can be recognised by the combination of dark occiput, dark posterior two-thirds of frons and simplified pattern of wing (uniformly pale brown with only a dark spot at apex of R_{2+3}). However, it is advisable to confirm the identification by the examination of the species-specific genital features, viz. subtriangular gonostylus, dark and projecting basal sclerite of postgonite and distinctive armature of saccus of distiphallus in the male and by the characteristic S7 and S10 in the female.

Biology: Adults were collected in May, and from August to November. An immature pair in copula was caught in May. No precise data about habitat are available; one female was swept from vegetation in a forest.

Distribution: The species is mainly known from western Africa (Senegal, Sierra Leone, Mali, Nigeria) and the adjacent Macaronesian Cape Verde Is. (? introduced); the only E. African record is from Uganda.

Amygdalops major sp. n.

(Figs 49–60, 126)

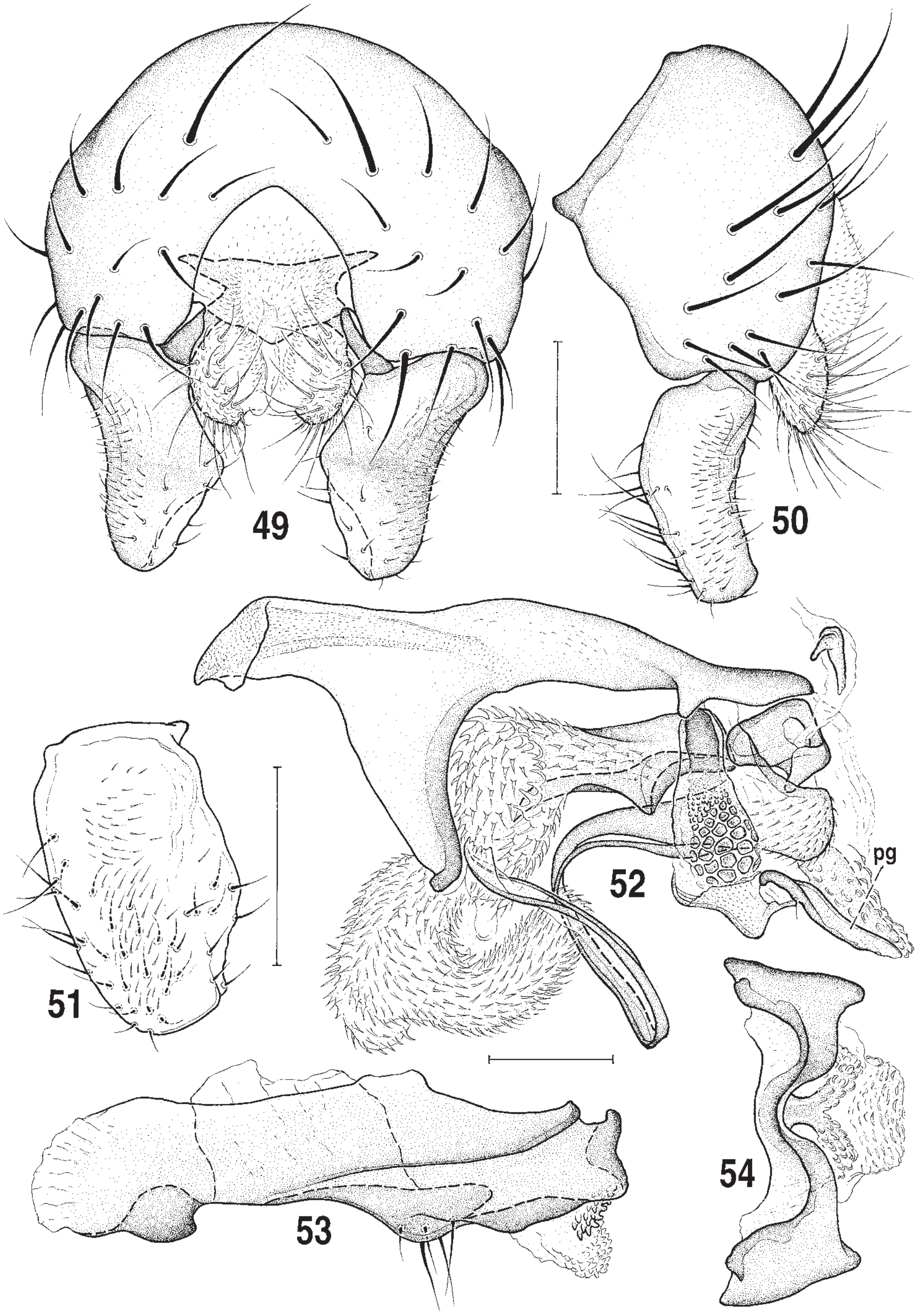
Type material: Holotype male, labelled: 'UGANDA: S.W., Fort Portal, 5 km NW, 2000 m, 10.i.1996, I. Yarom & A. Freidberg' (TAUI, genit. prep.). Paratypes: KENYA: Karura For., Nairobi, 5500 feet, 9–13.xii.1970, 1 male, A. E. Stubbs leg. (BMNH). MADAGASCAR: Antananarivo, Tsimbazaza, 14.iv.1991, 2 males; Rt.2, 20 km E Antananarivo, 3.iv.1991, 3 males, all A. Freidberg & Fini Kaplan leg. (TAUI, SMOC); Andasibe, ca. 19ºS 48ºE, 13–15.x.1987, 1 male 1 female, SF McE, JRD, SA leg. (AMSA). SENEGAL: 1 km NE Djibelor, about 7.5 km SW Ziguinchor, UTM 28PCJ5687, loc. 29, swept along roadside in forest, 8.xi.1977, 1 male, Cederholm, Danielsson, Hammarstedt, Hedquist, Samuelsson leg. (Lund Univ. Syst. Dept.: Sweden-Gambia-Senegal Expedition, Nov. 1977, MZLU); UGANDA: S.W., Semiliki Forest, 1250 m, 8.i.1996, 1 male; S.W., Kabale, 7 km NE, 1950 m, 23.xii.1995, 2 females; S.W., Kabale, 1950 m, 24.xii.1995, 1 female, all I. Yarom & A. Freidberg leg. (TAUI, SMOC); Masaka, 13.xi.1934, 1 male; Kampala, 12.xii.1934, 1 male; Budongo Forest, 7–8.ii.1935, 1 female, all F. W. Edwards leg. (BMNH). Most paratypes with genit. prep.

Etymology: The species is named 'major' (= Lat. larger) because it is larger on average than all other species of the A. *thomasseti* group.

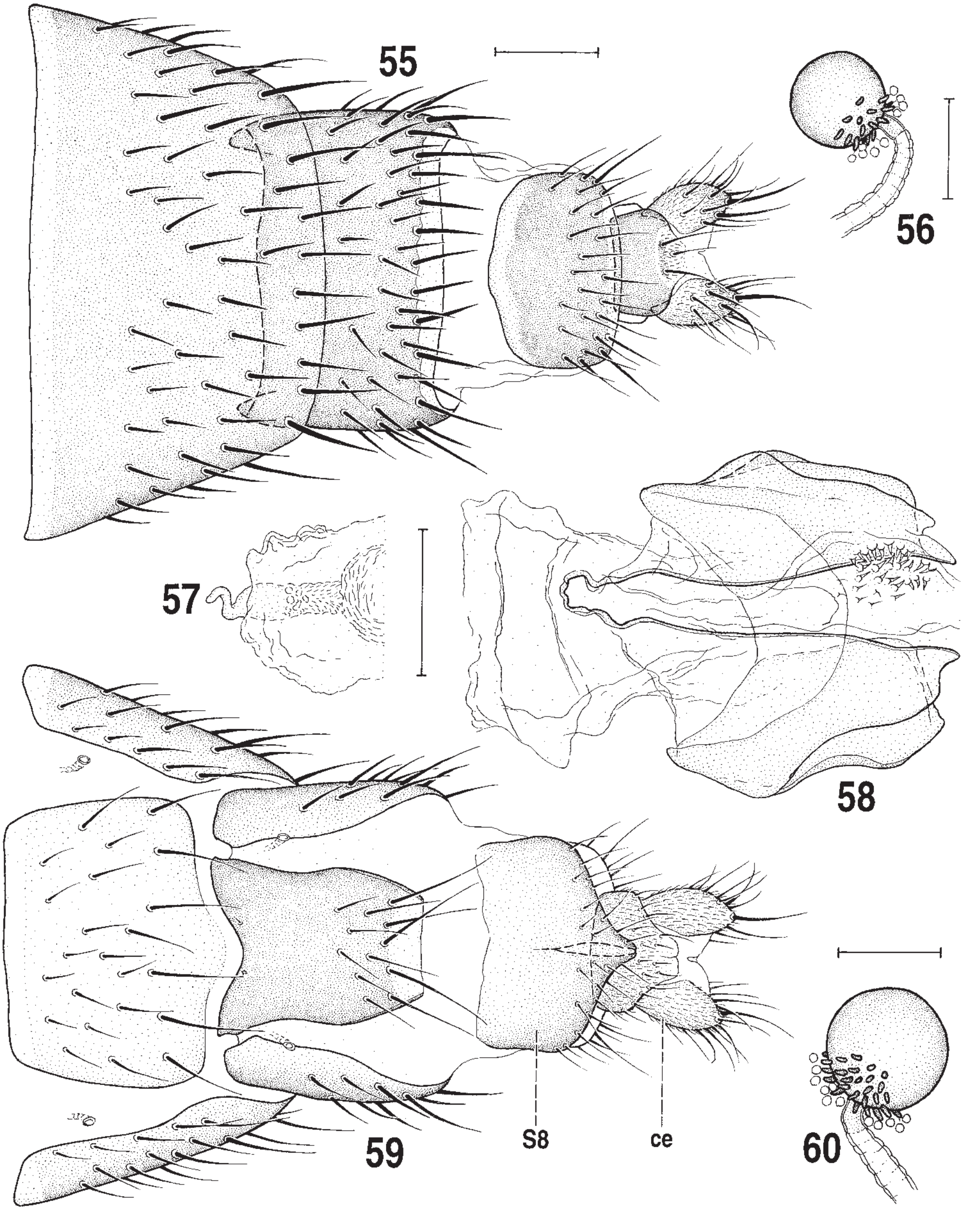
Description: Male.

Total body length 2.14–2.94 mm. Body bicolorous, brown and yellow.

Head: As long as high or slightly longer than high. Occiput completely brown to dark brown. Frons brown to dark brown with only anterior third (including relevant part of orbits) yellow to orange. Frontal triangle narrow, almost reaching anterior third of frons, shining and bare (at most with sparse microtomentum on anterior corner) including ocellar triangle. Orbits also shining, only areas between orbits, frontal triangle and margin of frons dull, pale grey microtomentose. Face orange ochreous, with narrow margin whitish yellow and silvery white microtomentose; gena yellowish white, silvery microtomentose and dull. Cephalic chaetotaxy: pvt distinct, crossed; vti markedly shorter than vte; oc slightly to distinctly longer than vti; 2 strong ors (posterior often almost as long as vte and anterior only slightly shorter) and 2 setulae in front of anterior ors (anterior setula only half length of posterior); 2–3 pairs of microsetulae medially in front of frontal triangle; 1 long vi and 1 subvibrissa being markedly shorter, sometimes only as long as foremost peristomal setula; other peristomals small; postocular setulae yet shorter than peristomals, in single dense



Figs 49–54. *Amygdalops major* sp.n., male paratype (Madagascar). 49. External genitalia, caudal view. 50. Same, lateral view. 51. Gonostylus, sublateral view (widest extension). 52. Aedeagal complex, lateral view. 53. Hypandrium and associated structures, lateral view. 54. Transandrium, caudal view. Scales = 0.1 mm. For abbreviation see text.



Figs 55–60. *Amygdalops major* sp.n., female paratype (Uganda). 55. Postabdomen, dorsal view. 56. Spermatheca. 57. Ventral receptacle, ventral view. 58. Internal sclerites, ventral view. 59. Postabdomen, ventral view. 60. Spermatheca. Scales: Figs 56, 60 = 0.05 mm, others = 0.1 mm. For abbreviations see text.

row. Palpus yellow, with 1 distinct black seta. Mouthparts yellow to orange. Eye large, covering most of head profile; its longest diameter 1.4–1.5 times as long as shortest one. Gena very narrow; its smallest height 0.08 times as long as shortest eye diameter. Antenna yellow to orange, somewhat darkened around base of arista; first flagellomere with long white cilia on apex. Arista 2.1 times as long as antenna, very long pectinate, with dorsal rays particularly long and erect.

Thorax: Narrower than head, dorsally largely dark brown, ventrally pale yellow to orange yellow. Mesonotum including scutellum almost completely dark brown, only humeral callus ochreous but the notopleural stripe reduced, darkened and often poorly visible; dark brown longitudinal stripe covering dorsal part of pleura sharply margined ventrally. Postscutellum dark brown as scutellum, both these parts separated by pale ochreous transverse stripe. Ventral portion of pleura orange yellow to whitish yellow (chiefly ventrally). Thoracic chaetotaxy: 1 very short prs; 2 dc but anterior only as long as sa, posterior dc very long; 2 sc, apical about as long as posterior dc, laterobasal short, hardly longer than anterior dc; 1 ppl, very minute; 2 stpl, anterior distinctly shorter; ventral part of sternopleuron with about 4 longer and several shorter hair-like setae. Scutellum as in *A. thomasseti*. Legs yellow to pale ochreous, hind knees sometimes darker, orange ochreous. Chaetotaxy of legs as in *A. thomasseti* but setae in posteroventral row of f_3 longer, with thickened and shortened setae restricted to apical fourth. Wing (Fig. 126) pattern and venation resembling those of *A. thomasseti*, including very slightly bent R_{4+5}, and apically somewhat convergent R_{4+5} and M. Discal cell short, narrow, apically dilated; r-m situated near its middle. Wing measurements: length 2.10–2.62 mm; width 0.67–0.84 mm, $Cs_3 : Cs_4$ = 2.04–2.58, r-m\dm-cu : dm-cu = 2.60–3.18. Haltere ochreous brown, with darker brown knob.

Abdomen: Preabdominal terga large and broad, extended on ventral side of abdomen, dark brown and sparselly greyish microtomentose, only T5 often with small paler pigmented laterobasal spot (invisible in dry specimens). T6 short, transverse, weakly sclerotised and poorly visible. Preabdominal sterna narrow, pale ochreous, becoming larger posteriorly; S5 largest and with longest setae. Postabdominal sterna (S6–S8) asymmetrical, dark and heavily sclerotised, all fused laterodorsally. S6 distinctly larger (including ventral portion) than in *A. thomasseti* and all allied species.

Genitalia: Epandrium hemispherical (Figs 49, 50), relatively long, setose in posterior half, with a pair of longer setae dorsomedially; anal opening small. Cercus moderately sized, densely setose. Medandrium (Fig. 49) relatively small, low, with laterally projecting dorsal corners. Gonostylus (Fig. 51) with simply suboval outline in widest extension view, but having strikingly concave outer posterolateral surface provided with several fine striae and wrinkles (Fig. 50); sparse micropubescence concentrated in the middle of outer side; inner side of gonostylus with longer setae, chiefly in anteroventral half. Hypandrium (Fig. 53) robust (high), with membranous internal lobes; transandrium (Fig. 54) relatively narrow, medially with ventral incision in which is inserted short, apicaly bifid caudal process provided by pigmented tubercles. Pregonite (Fig. 53) fused with hypandrium, little projecting ventrally but rather incurved, and with about 5 short setae. Postgonite (Fig. 52) slender, distally somewhat bent inside, with blunt apex and 1 small anterolateral setula in proximal fourth; basal sclerite attached to postgonite pale pigmented, somewhat ventrally projecting. Aedeagal part of folding apparatus attached to base of phallapodeme dorsally very dark, ventrally provided with flat tubercles; connecting sclerite relatively wide but inconspicuous because of pale pigmentation. Basal membrane armed by fine transverse tubercles (Fig. 54). Aedeagal complex (Fig. 52) with robust phallapodeme having bifurcate base, laterally projecting subbasal flat processes and simple apex. Aedeagus with small phallophore and large distiphallus. Base of distiphallus distinctly spinulose; saccus of distiphallus voluminous, densely overgrown by short, uniform spines except for a small area at base. Filum of distiphallus formed by 2 dark stripe-like twisted sclerites (one being proximally robust) terminating into a largely membranous apex provided with jagged margin. Ejacapodeme small, with usual slender projection.

Female differs from male as follows:

Total body length 2.70–3.00 mm.

Palpus and surrounding mouthparts brown. Humeral and notopleural areas often paler pigmented than in male. f_3 posteroventrally simply finely setulose. Wing measurements: length 2.85–3.06 mm, width 0.89–0.99 mm, $Cs_3 : Cs_4 = 2.07–2.58$, r-m\dm-cu : dm-cu = 2.70–3.00. Abdomen with brown to dark brown preabdominal terga, only T3 and sometimes T4 with small pale ochreous laterobasal spot on each side. Preabdominal sterna (S1–S5) and S6 narrow and pale yellow.

Postabdomen (Figs 55, 59). T6 uniformly brown, tapering posteriorly, densely shortly setose. S6 pale ochreous, slightly narrower than T7, with fine setae. T7 darker brown and narrower than T6, with dense short setae in posterior half. S7 narrow, elongate, dark brown, with somewhat projecting anterolateral corners, emarginate anterior margin and unpigmented area at posterior margin; setae long but fine and insterted in posterior two-fifths of sclerite. T8 dark except for paler anterior margin, plate-shaped, with rounded corners and thin dense setae in posterior half. S8 dark, slightly broader than T8, finely setose at posterolateral margin and posteromedially bulging, with narrow mediodorsal incision as usual. T10 small but relatively long, dark pigmented except for area behind insertion of a pair of longer setae, with sparse microtomentum restricted to posterior unpigmented part. S10 slightly wider and paler than T10, micropubescent except for posterior tapered part. Internal sclerotisation of genital chamber composed of 2 pairs of sclerotised, pale brown, twisted plates (see Fig. 58) but anterior ring-shaped structure indefinite, membranous, hardly visible; genital opening surrounded by small spine-like setulae. Ventral receptacle (Fig. 57) membranous, formed by broader bag (having internal microstructures in proximal half) and of twisted, slender, ventrally directed, terminal projection. Spermathecae 1+1 (Figs 56, 60) ball-shaped, one distinctly larger than the other, each with small dark, relatively dense spines inserted on basal third around duct insertion; duct cervix developed but short. Cerci robust, shortly setose.

Discussion: *A. major* sp.n. is the largest species of the *A. thomasseti* group. Besides the large size it can be best recognised from related species by the combination of dark knob of halteres, yellow legs, sexual dichroism of palpus (yellow in male, brown in female), large male S6 with thick ventral projecting part, concavely bent gonostylus and dark narrow female S7. In colour features *A. major* sp.n. is most similar to *A. acer* sp.n. but the latter species species differs in having yellow part of frons more reduced, vti markedly shorter, male S5 darker and posteriorly emarginate and quite different male genitalia (see below).

Biology: Adult flies were collected from October to February, and in April. No habitat record (except one specimen swept in a forest) is available.

Distribution: The species probably is widespread in Africa (recorded from Senegal, Uganda, Kenya) and Madagascar.

Amygdalops acer sp. n.

(Figs 61–65, 87, 127)

Type material: Holotype male, labelled: ‘Kilembe, 4,500 ft. F. W. Edwards.’, ‘UGANDA: Ruwenzori Range. xii. 1934 – i. 1935, B. M. E. Afr. Exp., B. M. 1935-203’ (BMNH, genit. prep.). Paratypes: UGANDA: S.W., Semiliki Forest, 1250 m, 8.i.1996, 1 male, I. Yarom & A. Freidberg leg. (TAUI, specimen with faded and damaged wings). MADAGASCAR: Mandraka, ca 19ºS 48ºE, 11–13.x.1987, 2 males; Andasibe, 19ºS 48ºE, 13–15.x.1987, 1 male, all SFMcE, JRD, SA leg. (AMSA, one specimen headless). All paratypes with genit. prep.

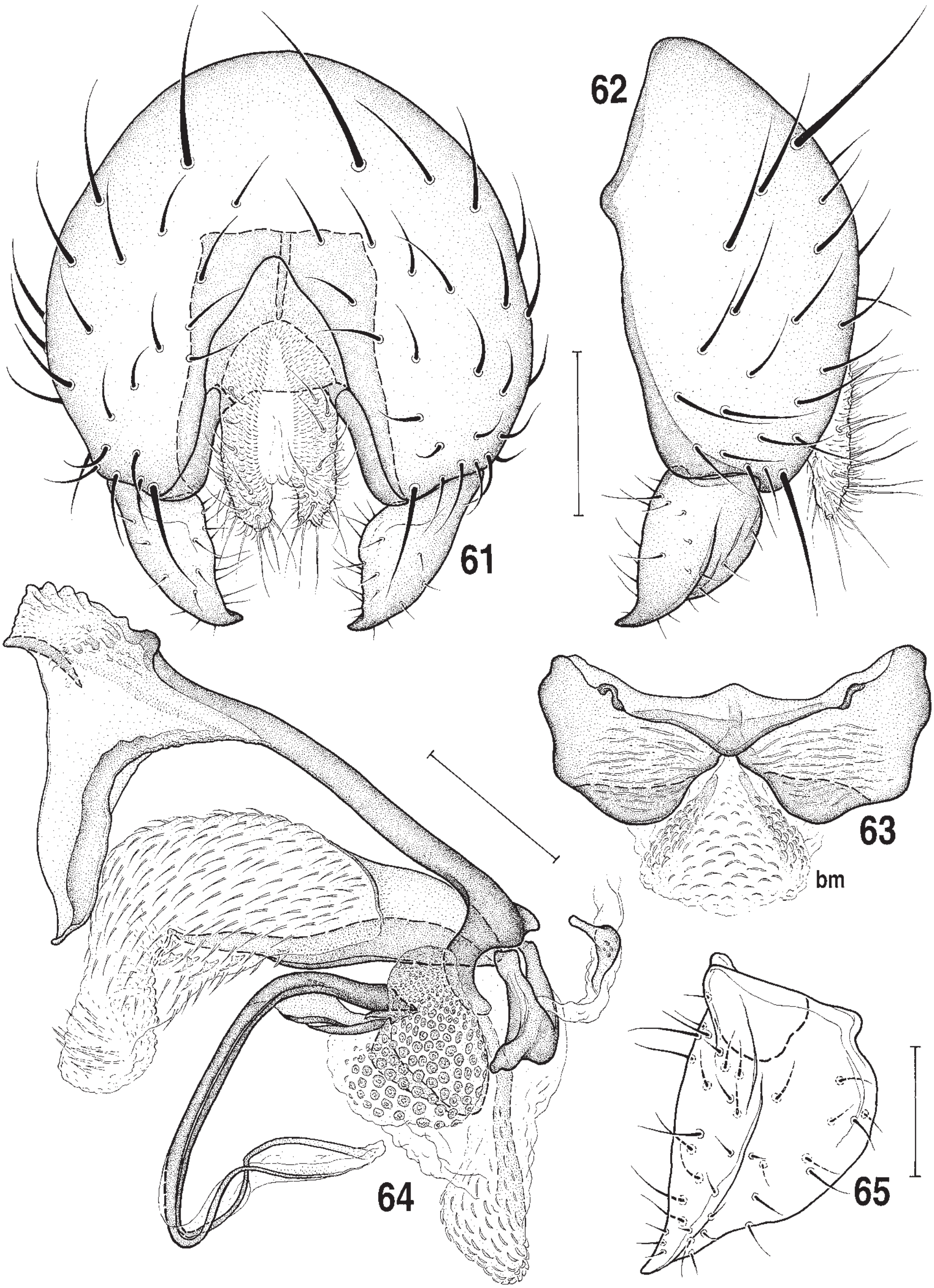
Etymology: The name ‘acer’ (= Lat. sharp) is derived from sharp, edge-like keel on the male gonostylus of the new species.

Description: Male.

Total body length 1.98–2.30 mm; bicolorous, brown and yellow.

Head: Slightly longer than high. Occiput uniformly brown. Most of frons brown to dark brown, with only anterior fifth ochreous brown and foremost part of orbits orange ochreous. Frontal triangle (including ocellar triangle) shiny and bare, reaching about half of frons (thus shorter than in related species); rest of frons dull and microtomentose, only posterior half of orbit subshiny. Face and gena yellowish white, gena and parafacialia along eye margin silvery white microtomentose; postgena also yellow and sharply contrasting with brown occiput. Mouthparts including palpus yellow. Cephalic chaetotaxy: pvt small but crossed; vti unusually short, only about half length of vte; vte longest of setae on frons; oc also short, slightly longer than vti; 2 long ors (posterior almost as long as vte, anterior only slightly shorter) and 2 usual setulae in front of anterior ors; microsetulae medially in front of frontal triangle almost invisible or absent; 1 long vi and 1 subvibrissa only half length of vi; peristomal setulae small and few in number; postocular setulae very minute. Subapical seta on palpus as long as subvibrissa. Eye convex; its longest diameter 1.45 times as long as shortest one. Gena narrow; its smallest height about 0.1 times as long as shortest eye diameter. Antenna generally yellow; pedicel more orange on inner side and 1st flagellomere somewhat darkened around insertion of arista. Arista about 1.7 times as long as antenna, long pectinate, particularly dorsally.

Thorax: Distinctly narrower than head, brown dorsally and yellow ventrally. Mesonotum including scutellum completely brown to dark brown as also is dorsal band across the pleural part of thorax; humeral and notopleural areas at most slightly paler than mesonotum, never yellow or ochreous. Postscutellum dark brown as scutellum, both these parts separated by a pale ochreous transverse stripe. Ventral portion of pleura yellow to pale yellow. Thoracic chaetotaxy: all macrosetae relatively weak; 1 small prs; 2 dc but anterior very short (only as long prs), posterior dc long though distinctly shorter than apical sc; 2 sc, apical longest of thoracic setae, laterobasal small, as long as



Figs 61–65. *Amygdalops acer* sp.n., male holotype. 61. External genitalia, caudal view. 62. Same, lateral view. 63. Transandrium, caudal view. 64. Aedeagal complex, lateral view. 65. Gonostylus, sublateral view (widest extension). Scales: Fig. 65 = 0.05 mm, others = 0.1 mm. For abbreviation see text.

anterior dc; ppl indistinct; 2 stpl, anterior distinctly shorter and weaker; ventral setae on sternopleuron few and weak, hair-like. Scutellum rounded subtriangular, with slightly convex dorsal surface. Legs entirely yellow to yellowish ochreous. Chaetotaxy of legs as in related species including posteroventral row of setae on f_3 becoming short and thicker in distal third of femur. Wing (Fig. 127) with similar pattern as in *A. thomasseti* although the whitish longitudinal area between R_{2+3} and R_{4+5} in front of dark subapical spot less light and poorly delimited. Subapical dark spot more elongate than that of *A. thomasseti*. R_{4+5} and M subparallel, only apically slightly convergent. Discal cell short and narrow; r-m situated distinctly in front of its middle. Wing measurements: length 2.20–2.26 mm; width 0.67–0.72 mm, Cs_3:Cs_4 = 2.04–2.32, r-m\dm-cu : dm-cu = 3.35–3.61. Haltere with ochreous brown stem and darker brown knob.

Abdomen: Preabdominal terga large, broad, all completely dark brown. T6 very small, short, weakly sclerotised and pale. Preabdominal sterna narrow, all pale ochreous except darker S5 which is markedly broader than S4, posteriorly widened and distinctly emarginate on posterior margin. The specimens from Madagascar have preabdominal sterna pale brown and S5 darker brown, although not as dark as preabdominal terga. S6–S8 asymmetrical, dark brown, fused laterodorsally as usual in the genus. S6 short, with ventral part strip-like.

Genitalia: Distinctive. Epandrium hemispherical but relatively short (Figs 61, 62), sparsely setose, with a pair of long dorsomedial setae and small subtriangular anal opening. Cercus moderate, finely setulose. Medandrium (Fig. 61) narrow but comparatively high. Gonostylus (Fig. 65) unusually small, subtriangular, with acute, anteriorly bent apex (less acute in paratypes from Madagascar) and with sharp, longitudinal, edge-like keel on outer side; no micropubescence, only a few setae on its outer side; inner side of gonostylus with more longer setae. Hypandrium (Fig. 87) robust, high in proximal half, with unpigmented membranous internal lobes; transandrium (Fig. 63) robust, provided by transverse ridges and ventrally emarginate, with a pair of slender weak sclerites of caudal process that are almost meeting dorsally and diverging ventrally. Pregonite (Fig. 87) fused with hypandrium, incurved but separated posteriorly from hypandrium by a deep rounded incision, each with about 7 setae, 1 of them longer. Postgonite (Fig. 87) slender, very slightly sinuous, apically pointed and with 1 small anterolateral setula in proximal fourth; basal sclerite attached to postgonite dark, slender and hidden internally behind postgonite. Aedeagal part of folding apparatus attached to base of phallapodeme (Fig. 64) pale even dorsally, provided by flat rounded tubercles; connecting sclerite slender and pale pigmented. Basal membrane with only fine transverse tubercles (Fig. 63). Aedeagal complex (Fig. 64) with unusually slender phallapodeme having basally besides usual fork strongly laterally projecting curved wing-like processes; fulcrum and apex of phallapodeme pale pigmented and the latter strongly tuberculate. Aedeagus with short frame-like phallophore and large distiphallus. Base of distiphallus probably bare. Saccus of distiphallus not very large, rather uniformly finely spinulose (similarly as in *A. thomasseti*). Filum of distiphallus formed by 2 dark stripe-like twisted sclerites which are apically tapered and terminate in membranous, somewhat dilated apex. Ejacapodeme small, with usual slender projection.

Female unknown.

Discussion: This distinctive species is externally similar to *A. major* sp.n. (for differences see under that species) but its wing pattern most resembles that of *A. simplicior* sp.n. However, it differs from all other *Amygdalops* species in having peculiar gonostylus (with sharp keel on outer side), base of phallapodeme (with wing-shaped lateral processes) and transandrium (sculptured by transverse ridges). The paratypes from Madagascar are somewhat aberrant; they differ from E. African specimens by darker preabdominal sterna and less acute apex of gonostylus. More material is necessary to evaluate these differences taxonomically; the possibility that the Madagascan population represents a different taxon (probably of subspecific level) cannot be excluded.

Biology: Specimens examined were collected in October, and from December to January.

Distribution: Only known from Uganda and Madagascar.

Amygdalops nigrinotum Sueyoshi & Roháček, 2003

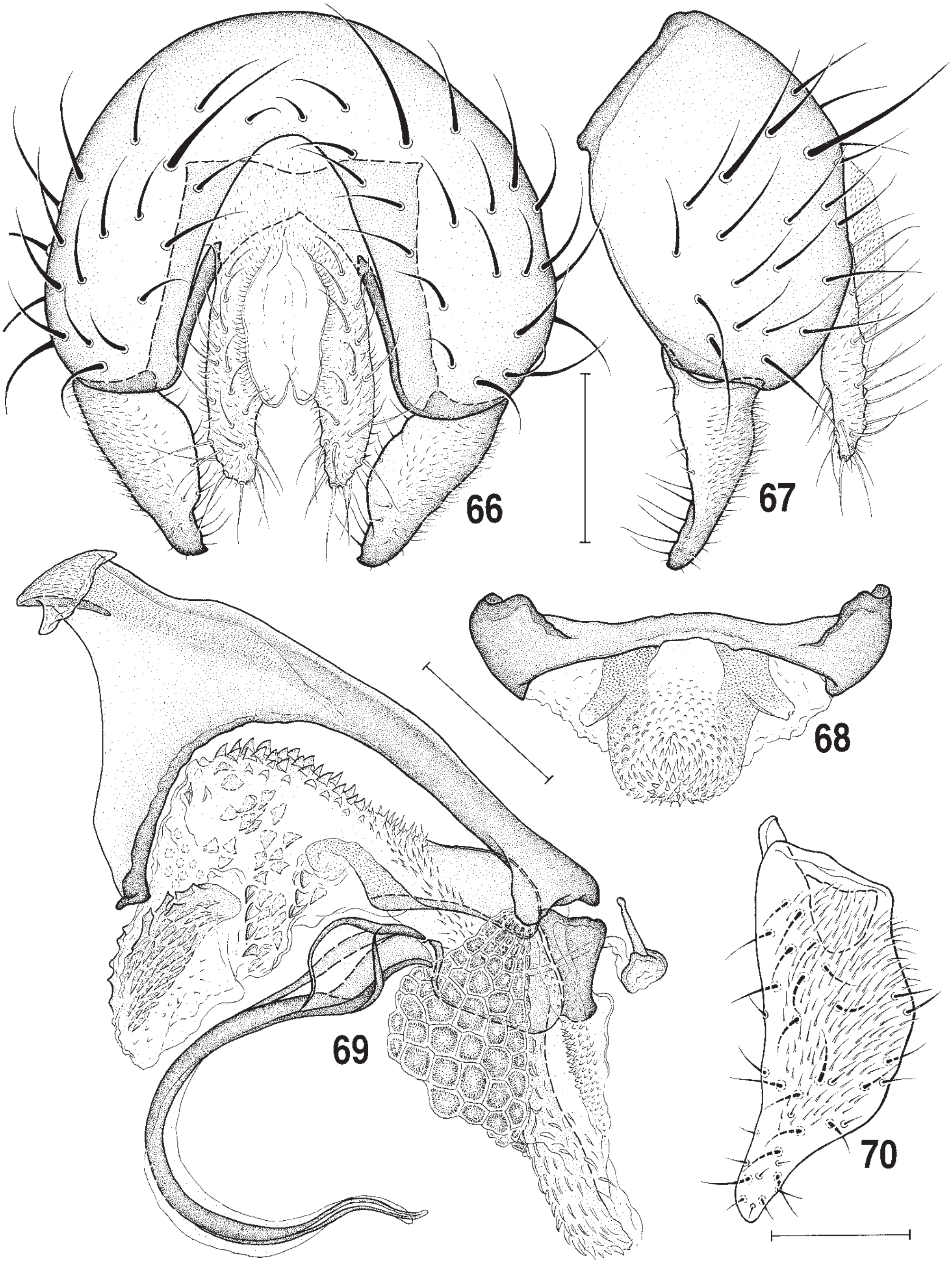
(Figs 66–76, 128)

Amygdalops nigrinotum Sueyoshi & Roháček, 2003: 18–21, Figs 1a–g, 2a, 3 [description, relationships].
Amygdalops thomasseti: Hardy & Delfinado 1980: 225–227, Figs 94a–e [misidentification].

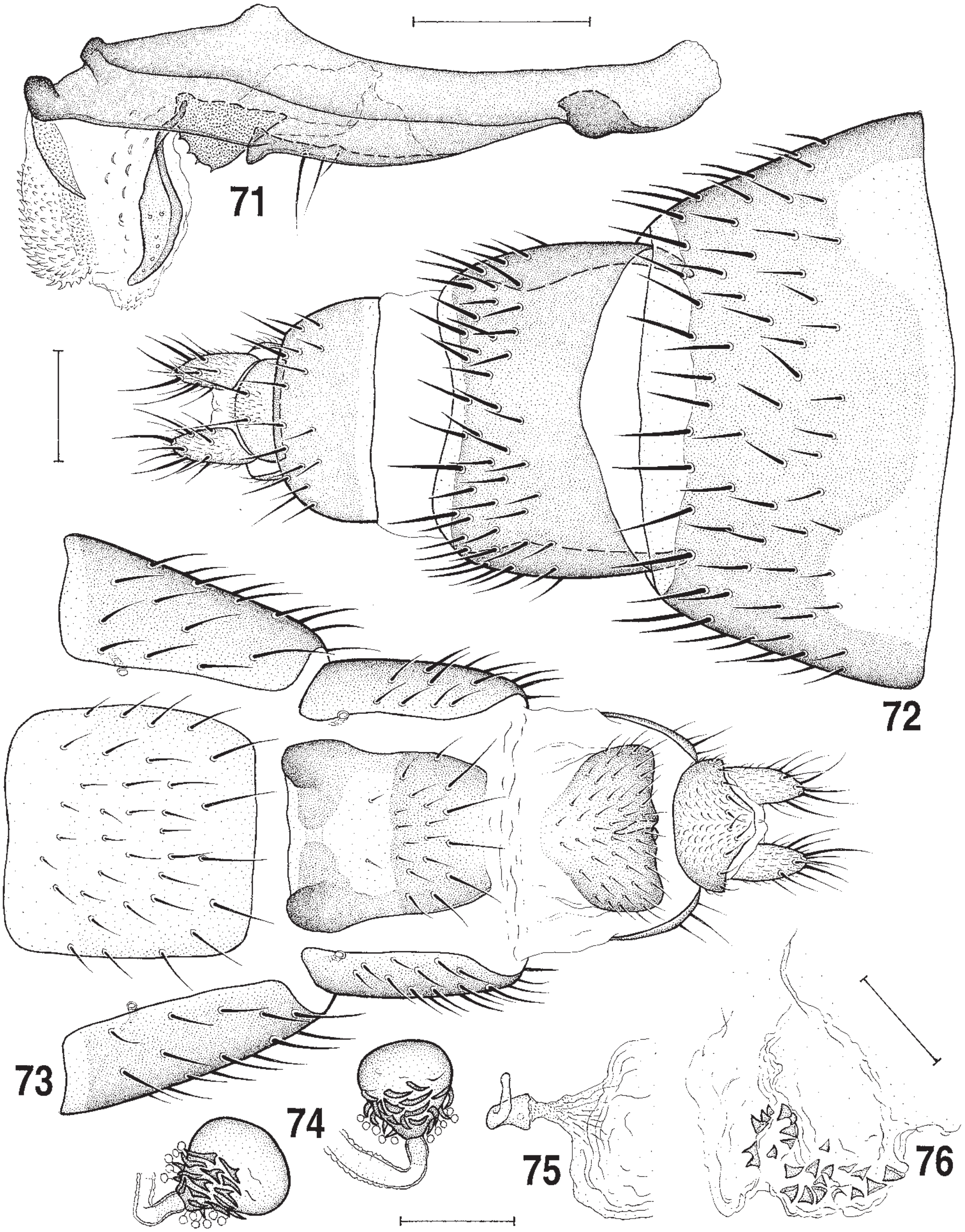
Type material: Holotype male, labelled: 'Sueyoshi Park, Naha City, Ryukyu, Japan, 26.iii.2000, H. Nakayama leg.' (lime green circle), 'An 1081' (BLKU). For paratypes see Sueyoshi & Roháček (2003).

Other material examined: SEYCHELLES: Mahe, Beau Vallon, 4.xi.1997, 1 male 1 female; Mahe, Jardin botanique, 11.xi.1977, 1 male 1 female; Mahe, Anse Royale, 13.xi.1977, 3 males 1 female; Mahe, Rivière aux Poules Bleues, 13.xi.1977, 1 male 1 female; Mahe, Cascade, 18.xi.1977, 1 male, all J. David & L. Tsacas leg. (Mission Seychelles C.N.R.S.-R.C.P. 318, Novembre 1977) (BMNH, 1 male 1 female SMOC). Most specimens with genit. prep.

Description: Male. Total body length 1.74–2.07 mm. Body bicolorous, brown and yellow. Head somewhat higher than long. Occiput brown to ochreous brown, usually paler medially and around bases of vte and vti. Frontal triangle reaching to anterior third of frons, with very narrowed anterior corner, largely bare and shiny, including ocellar triangle. Frons brown with yellow anterior third; stripes between frontal triangle and orbits distinctly darker brown than other parts of frons, greyish microtomentose and dull. Orbit bicolorous, its anterior third yellow and dull, posterior two-thirds brown and more shining. Face yellow to pale ochreous; parafacialia and gena whitish yellow to almost white, with silvery white microtomentum; also postgena pale yellow, contrasting with brown occiput. Mouthparts yellowish orange including palpus. Cephalic chaetotaxy: pvt distinct and strongly crossed; vti about two-thirds of length of vte, the latter longest of cephalic setae; oc about as long as vti; 2 long ors, posterior as long as vte or slightly shorter, anterior distinctly shorter but always longer than oc; 2 (rarely only 1) microsetulae in front of anterior ors, anterior orbital microsetula only half length of posterior one; usually 2 pairs of microsetulae medially in front of frontal triangle; 1 long vi and 1 subvibrissa, about two-thirds to three-fourths of vi; peristomal setulae longer anteriorly, short posteriorly; postocular setulae very minute; palpus with usual subapical seta. Eye very convex, with longest diameter 1.5 times as long as shortest one. Gena anteriorly very narrow; its smallest height 0.07 times as long as shortest



Figs 66–70. *Amygdalops nigrinotum* Sueyoshi & Roháček, male (Figs 66, 67, 70 - paratype, Japan; Figs 68, 69 - Seychelles). 66. External genitalia, caudal view. 67. Same, lateral view. 68. Transandrium, caudal view. 69. Aedeagal complex, lateral view. 70. Gonostylus, sublateral view (widest extension). Scales: Fig. 70 = 0.05 mm, others = 0.1 mm.



Figs 71–76. *Amygdalops nigrinotum* Sueyoshi & Roháček, male (Seychelles), paratype female (Hawaii). 71. Hypandrium and associated structures, lateral view. 72. Postabdomen, dorsal view. 73. Same, ventral view. 74. Spermathecae. 75. Ventral receptacle, ventral view. 76. Left wall of female genital chamber (uterus). Scales: Figs 71–73 = 0.1 mm, others = 0.05 mm.

eye diameter. Antenna yellow to yellowish ochreous; usually more or less darkened on outer side of pedicel and around base of arista. Arista 1.9 times as long as antenna, long pectinate.

Thorax narrower than head, bicolorous, brown and yellow. Mesonotum including scutellum brown, more rarely with a pair of pale ochreous spots medially just behind neck. Humeral and notopleural areas yellow or orange yellow; pleural part of thorax with brown dorsal band extending from propleuron to haltere and sharply delimited from pale yellow to whitish yellow ventral portion of pleura. Thoracic chaetotaxy: 1 very small and fine prs; 2 dc, posterior very long (about as long as apical sc), anterior short and weak, less than one-third of posterior dc; 2 sc, apical long and strong, laterobasal yet shorter than anterior dc; 1 ppl, reduced to fine microsetula; 2 stpl, posterior longer; additional setae on sternopleuron rich on ventral part with some hair-like setulae inserted also close to stpl macrosetae. Scutellum rounded triangular with slightly convex dorsal surface. Legs completely yellow to pale yellow, with the same chaetotay as in *A. thomasseti*, but f_1 and f_3 with longer and more numerous setae in posteroventral rows. Wing (Fig. 128) with pattern and venation of *A. thomasseti* type, but darkened stripe along R_{4+5} usually less distinct and also pale spot between R_{2+3} and R_{4+5} not as whitish as in *A. thomasseti*, thus more similar to that of *A. simplicior* sp.n. R_{4+5} and M subparallel, very slightly convergent apically; r-m situated near middle of discal (dm) cell. Wing measurements: length 1.62–2.00 mm; width 0.50–0.62 mm, Cs_3:Cs_4 = 2.12–2.40, r-m\dm-cu : dm-cu = 3.18–3.78. Haltere with ochreous stem and brown knob.

Abdomen. Preabdominal terga large, brown to dark brown, T4 with small, T5 with larger yellow or ochreous laterobasal spot on each side. T6 weakly sclerotised, short and very pale. Preabdominal sterna small and narrow, pale ochreous and becoming somewhat wider posteriorly, S5 the largest. S6–S8 dorsolaterally fused, S6 ventrally shortened, transversely band-like, S8 relatively long.

Genitalia. Epandrium hemispherical, medium-long (Figs 66, 67), moderately setose, with 1 dorsomedial and/or also 1 dorsolateral pair of longer setae; anal opening large, rounded substriangular (Fig. 66). Cercus long, projecting ventrally, almost as long as gonostylus. Medandrium (Fig. 66) comparatively high and wide. Gonostylus (Fig. 70) small, suboblong, with tapered but rounded apex; most of its outer side with dense micropubescence, only anterior margin bare; inner side of gonostylus with longer setae, particularly in apical half. Hypandrium (Fig. 71) moderate, with weak unpigmented internal lobes; transandrium (Fig. 68) simple, slender, with straight ventral margin; caudal process represented by a pair of dorsally separate and weak sclerites each of which has small lateral projection. Pregonite (Fig. 71) very low, fused with hypandrium, incurved and only posteriorly slightly ventrally projecting, with only 3–4 setae, 1 of them longer. Postgonite (Fig. 71) slightly sinuous, proximally slender, widened in the middle, apically tapered but not acute, with only a few minute microsetulae on outer side; basal sclerite attached to postgonite robust, finely dotted and provided by some small teeth posteroventrally. Aedeagal part of folding apparatus attached to base of phallapodeme (Fig. 69) not darkened dorsally, provided by large flat polygonal tubercles; connecting sclerite very slender, long, pale pigmented. Basal membrane densely spinulose, particularly ventrally (Figs 68, 71). Aedeagal complex (Fig. 69) with moderate phallapodeme, having bifurcate base and apex with short lateral projections. Aedeagus with short frame-like phallophore and large distiphallus. Base of distiphallus bare. Saccus of distiphallus large, except for base membranous and provided by rich thorn-like spines dorsally, laterally as well as subapically; fine spinulae are only close to sclerotised base of saccus. Filum of distiphallus formed by 2 dark stripe-like twisted sclerites which are closely affixed except for proximal and distal end and terminate in very tapered apex. Ejacapodeme small, with very slender projection.

Female differs from male as follows:

Total body length 1.90–2.42 mm.

f_3 posteroventrally simply finely setulose, lacking shortened setae. Wing measurements: length 1.94–2.27 mm, width 0.55–0.68 mm, $Cs_3 : Cs_4$ = 2.00–2.39, r-m\dm-cu : dm-cu = 3.27–3.54. Abdomen with preabdominal terga shorter, more transverse. T1 and T2 completely dark brown, T3–T6 with pale yellow laterobasal spot on each side; spots on T3 smallest, on T5 largest (extended over more than basal third of sclerite). Preabdominal sterna smaller and narrower than in male, pale ochreous-yellow; S4 and S5 subequal and as broad as S6.

Postabdomen (Figs 72, 73). T6 large, markedly broader than T7, densely shortly setose, brown with pale yellow laterobasal spots which are medially connected by transverse stripe. S6 whitish yellow, distinctly narrower than T7, with fine setae. T7 narrow, dark brown, anteriorly shallowly emarginate, with dense short setae in posterior half. S7 with pattern similar to that of *A. simplicior*, thus, with unpigmented central area, darkest anterolateral rounded corners and setose posterior pigmented part, but differing in elongate shape, lacking anteromedial cuspidate structures and richer setosity. T8 paler than T7, plate-shaped, with strongly rounded posterior corners and thin dense setae in posterior half. S8 dark, distinctly narrower than T8, finely densely setulose, posteromedially slightly bulging, with narrow mediodorsal incision as usual. T10 small and relatively short, dark and bare except for small posteromedial microtomentose area, and with of a pair of longer setae. S10 also dark but wider than T10, micropubescent, with setulae at posterior margin. Internal sclerotisation of genital chamber very weak, unpigmented and hardly visible but provided with short thorn-like spines near genital opening (Fig. 76). Ventral receptacle (Fig. 75) membranous, formed by strangled pouch and vermicular, ventrally directed, terminal projection. Spermathecae (1+1) not spherical as incorrectly described by Sueyoshi & Roháček (2003) but in contrast to all known relatives somewhat pear-shaped (Fig. 74), narrowed at duct insertion, with dense curved spines inserted on basal half of spermatheca; duct cervix developed but short. Cerci (Fig. 72) moderate, with short setae.

Discussion: This widespread species (see below) belongs to the *A. thomasseti* group and resembles species with dark mesonotum and knob of halter (i.e. *A. major* sp.n. and *A. acer* sp.n). Its wing pattern is most similar to that of *A. acer* sp.n. but it can be recognised from both above species in having paler occiput and spots around bases of vertical setae, yellow or orange humeral and notopleural areas and quite different male and female genitalia. The peculiar caudal process of transandrium with lateral projections, saccus of distiphallus and pyriform spermathecae armed by short thorns and other genital features indicate that *A. nigrinotum* probably has no close relative among African species of the *A. thomasseti* group and that its nearest ally could plausibly be found in the Oriental (unfortunately largely unknown) fauna of the genus.

Biology: Sueyoshi & Roháček (2003) recorded adults collected from March to May and August to December. In Seychelles, the flies were captured in November.

Distribution: The species has only been known from Japan (Izu, Ogasawara, Ryukyu Is.), Hawaii (Oahu I.) and Indonesia (Java), see Sueyoshi & Roháček (2003). Hardy & Delfinado (1980, sub *A. thomasseti*) recorded it also from Hawaii (Oahu I., Kauai I., Molokai I., Hawaii I.). The above record from Seychelles is the first from the Afrotropical Region.

Amygdalops obscurior sp. n.

(Figs 77–86, 129)

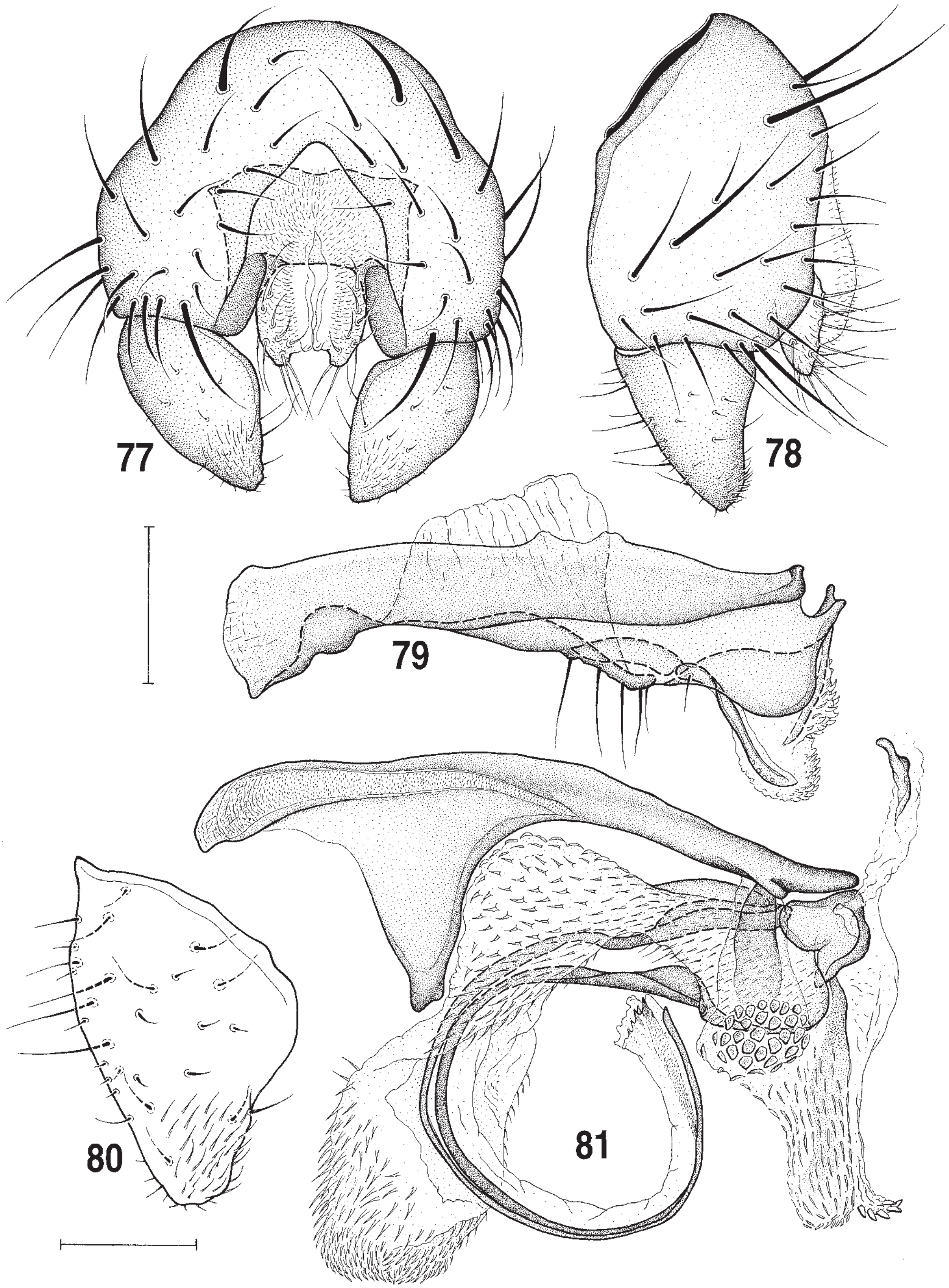
Type material: Holotype male, labelled: 'UGANDA: S.W., Semiliki Forest, 1250 m, 8.i.1996, 1 male, I. Yarom & A. Freidberg' leg. (TAUI, genit. intact). Paratypes: UGANDA: same data as for holotype, 4 males 6 females (TAUI, 1 male 1 female SMOC, all with genit. prep.).

Etymology: The species is named 'obscurior' (= Lat. darker) owing to its darker colouring of frons, thorax, halteres etc.

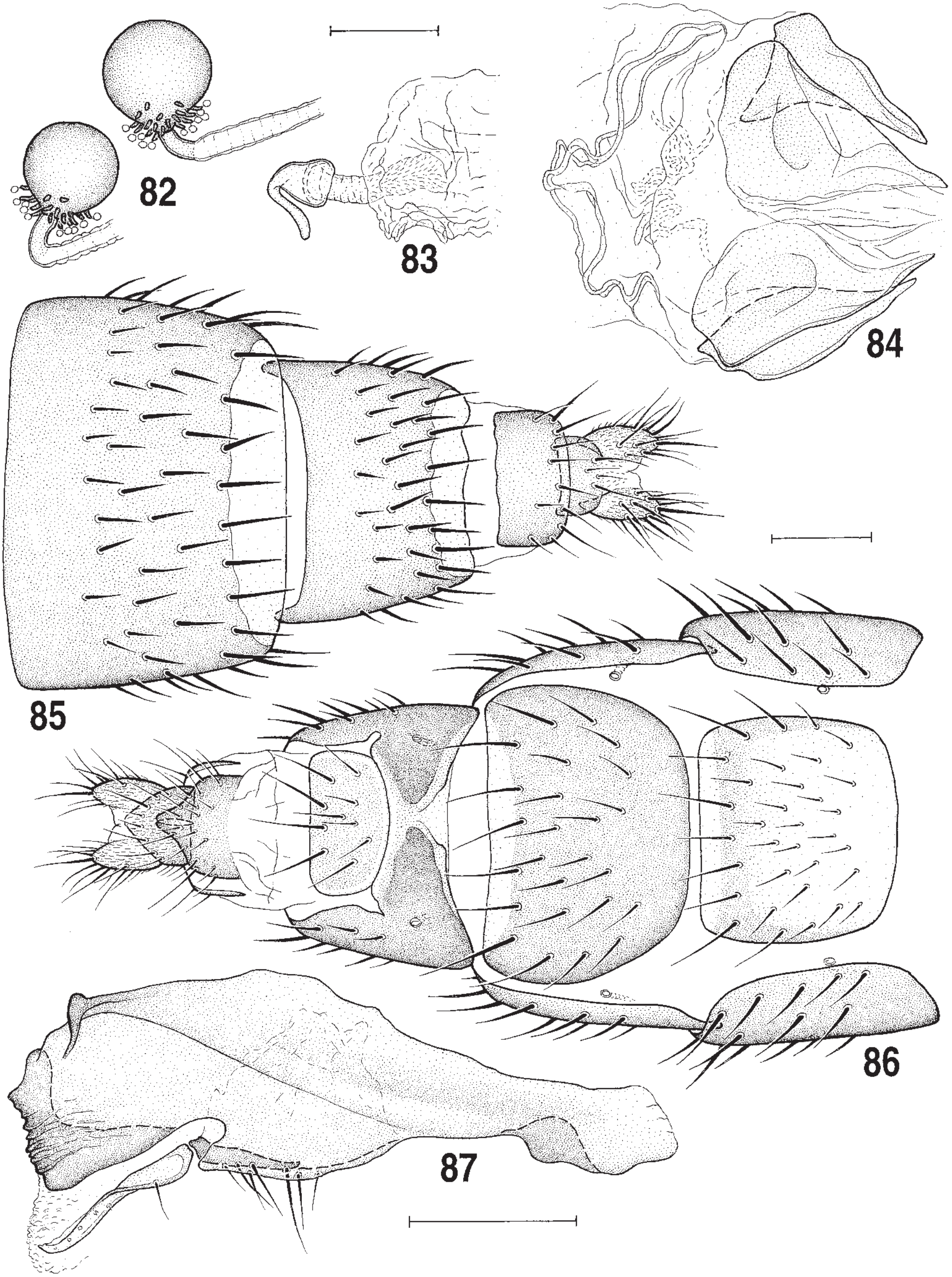
Description: Male. Total body length 1.78–2.10 mm; bicolorous, dark brown and yellow.

Head: Slightly higher than long. Occiput completely dark brown. Frons dark brown, only its anterior fourth ochreous to yellow (at frons margin). Frontal triangle very narrow, bare and shiny including ocellar triangle and reaching over anterior third of frons. Orbit dark brown, with only anterior fourth ochreous or yellow, shiny throughout its length and almost without microtomentum; stripes between orbits and frontal triangle dark grey microtomentose and dull. Face yellowish to brownish ochreous; narrow parafacialia, gena and ventral part of postgena whitish yellow, silvery white microtomentose. Ventral margin of gena, outer mouthparts and palpus pale brown; inner mouthparts (proboscis) yellow. Cephalic chaetotaxy: pvt short, with apices crossed; vte and posterior ors subequal and longest among cephalic setae; vti and oc subequal and about two-thirds of vte; 2 long ors, anterior only slightly shorter than posterior) and 2 usual ors setulae (anterior very minute) in front of anterior ors; 1–2 pairs of microsetulae medially in front of frontal triangle; 1 long vi and 1 shorter subvibrissa (about two-thirds of vi); peristomal setulae short and postoculars yet smaller; palpus with distinct subapical seta. Eye with longest diameter 1.4 times as long as shortest one. Gena very narrow; its smallest height 0.08 times as long as shortest eye diameter. Antenna yellow, with darkened apical part of inner side of pedicel and vicinity at insertion of arista. Arista 1.9 times as long as antenna, long pectinate, particularly dorsally proximally.

Thorax: Markedly narrower than head, bicolorous. Mesonotum including scutellum and notopleural areas brown to dark brown; also humeral callus, entire propleura and dorsal band across pleura brown; ventral part of pleura yellow to pale yellow. Thoracic chaetotaxy: 1 small prs; 2 dc, posterior very long and as long as apical sc, anterior small, only one-fourth posterior; 2 sc, apical long, laterobasal about as long as anterior dc; 1 ppl, reduced to microsetula; 2 stpl, posterior strong and longer than usual, anterior short and weak; other setae on ventral part of sternopleuron few and hair-like. Scutellum rounded triangular, more convex dorsally. Legs yellow to yellowish ochreous, only f_3 with brown darkened apical fourth. Chaetotaxy of legs as in *A. thomasseti*; f_3 with usual posteroventral row of setae which are strongly shortened and densely arranged in apical



Figs 77–81. *Amygdalops obscurior* sp.n., male paratype (Uganda). 77. External genitalia, caudal view. 78. Same, lateral view. 79. Hypandrium and associated structures, lateral view. 80. Gonostylus, sublateral view (widest extension). 81. Aedeagal complex, lateral view. Scales: Fig. 80 = 0.05 mm, others = 0.1 mm.



Figs 82–86. *Amygdalops obscurior* sp.n., female paratype (Uganda). 82. Spermathecae. 83. Ventral receptacle, lateral view. 84. Internal sclerites, ventral view. 85. Postabdomen, dorsal view. 86. Postabdomen + 5th segment, ventral view.

Fig. 87. *Amygdalops acer* sp.n., male holotype. Hypandrium and associated structures, lateral view. Scales: Figs 82–84 = 0.05 mm, others = 0.1 mm.

fourth. Wing (Fig. 129) with 2 whitish iridescent spots, larger one between R_{4+5} and C in front of subapical dark area, and smaller rounded one behind posterior (dm-cu) cross-vein and large subapical dark spot. R_{2+3} and R_{4+5} distinctly, M slightly sinuous. Discal (dm) cell relatively long, with r-m situated in front of its middle. A_1 very short, anal lobe strongly reduced. Wing measurements: length 1.98–2.18 mm; width 0.61–0.66 mm, $Cs_3 : Cs_4$ = 2.21–2.58, r-m\dm-cu : dm-cu = 2.87–3.58. Haltere with yellow stem and dark to blackish brown knob.

Abdomen: All preabdominal terga and sterna brown to dark brown. T6 small, transverse, weakly sclerotised and very pale brown. Preabdominal sterna becoming wider posteriorly, S5 markedly broader than preceding sclerites, with shallow posterior emargination. Postabdominal sterna S6–S8 dorsolaterally fused, heavily sclerotised and dark brown. S6 ventrally projecting in a narrow transverse stripe reaching far on right side of abdomen.

Genitalia: Epandrium hemispherical, medium-long (Figs 77, 78), moderately setose; 1 dorsomedial, 1 lateral and 2 posterior ventrolateral setae longer than others; anal opening small, rounded substriangular (Fig. 77). Cercus relatively short, finely setose. Medandrium (Fig. 77) comparatively wide and low. Gonostylus (Fig. 80) medium-sized, broad basally and tapered apically, with blunt apex, micropubescence restricted to distal third of outer side; inner side of gonostylus with longer setae, particularly at anterior margin. Hypandrium (Fig. 79) relatively robust, heavily sclerotised including posterolateral bulging part, with large membranous internal lobes; transandrium slender, medially bent dorsally; caudal process formed by a pair of slender sclerites arising close to each other in medial concavity of transandrium, divergent and widened distally. Pregonite (Fig. 79) very low, fused with hypandrium, incurved, not projecting ventrally, with 5–6 setae, 1–2 of them shorter. Postgonite (Fig. 79) slightly sinuous, slender in lateral view but actually flat, broad in ventral view, with 1 proximal seta inserted on ventrolateral surface; basal sclerite attached to postgonite large, dark but incurved and hence slender in lateral view. Aedeagal part of folding apparatus attached to base of phallapodeme (Fig. 81), dark dorsally and provided by relatively small flat tubercle-like spines; connecting sclerite slender, pale pigmented. Basal membrane (Fig. 79) covered by transverse hyaline tubercles (ventrally) and short spines (dorsally). Aedeagal complex (Fig. 81) with moderate phallapodeme, having usual bifurcate base and simple apex. Aedeagus with small (as long as high) phallophore and voluminous distiphallus. Base of distiphallus finely setulose. Saccus of distiphallus large, except for base membranous and with two groups of fine spines, less dense in basal half and denser in apical fourth of saccus. Filum of distiphallus formed by 2 dark, very slender stripe-like twisted sclerites (the ventral being darker pigmented) terminating in membranous, dilated and flattened tip, apex of which is finely dentate. Ejacapodeme small, with slender digitiform projection.

Female differs from male as follows:

Total body length 2.06–2.31 mm.

First flagellomere often more darkened, ochreous brown externally. Notopleural and humeral areas sometimes paler brown than measonotum. Palpus and surrounding mouthparts usually darker brown than in male. f_3 posteroventrally simply setulose. Wing measurements: length 2.38–2.66 mm, width 0.67–0.75 mm, $Cs_3 : Cs_4$ = 2.40–2.74, r-m\dm-cu : dm-cu = 3.52–3.35. Abdomen with preabdominal terga shorter and more transverse, completely dark brown. Preabdominal sterna S2–S5 about the same width, at most S2 slightly narrower than S3, all pale ochreous or S5 with pale brown darkened posterior and lateral margins (Fig. 86).

Postabdomen (Figs 85, 86). T6 large, only slightly narrower but longer than T5, densely shortly setose, dark brown. S6 markedly wider and darker brown than S5, and also wider than T7. T7 dark brown, narrow, posteriorly slightly tapered, anteriorly shallowly emarginate, with dense short setae in posterior two-fifths. S7 very distinct, anteriorly fused with ventrolateral corners of T7 and ornamented by bipartite (medially divided) dark pigmentation; posteriorly formed by an attached transversely oblong pale pigmented and setose plate (Fig. 86). T8 also dark as T7, small, plate-shaped, with rounded posterior corners and fine setae in posterior half. S8 dark, distinctly narrower than T8, finely but rather long setulose, posteromedially strongly projecting and with narrow mediodorsal incision as usual. T10 small, moderate in length, dark and bare except for some microtomentum at indistinct posterior margin and with several (usually 4) posteromedial setae. S10 also dark, hardly wider than T10, micropubescent, with longer setulae at posterior margin. Internal sclerotisation of genital chamber composed of weak, pale pigmented and complexly bent posterior sclerites (two coalesced pairs) and of transverse, strongly twisted, slender, unpigmented anterior ring-shaped structure (Fig. 84). Ventral receptacle (Fig. 83) membranous, formed by pouch on proximal (internally pubescent) tube and digitiform, anteroventrally directed terminal projection. Spermathecae (1+1), one slightly larger than the other (Fig. 82), spherical although slightly tapered towards duct insertion, each with small curved but blunt spines inserted on basal third of spermatheca; duct cervix well developed, relatively long. Cerci moderate, with short setae.

Discussion: *A. obscurior* sp.n. is somewhat intermediate between species of the *A. thomasseti* group and the *A. sparsus* group. Because it has white iridescent spots on wing and sinuous veins R_{2+3} and R_{4+5} and dark, heavily sclerotised male preabdominal sterna, it is considered a most primitive member of the latter group, although some other wing features (eg. large pale spot between R_{4+5} and C) are similar to those of the *A. thomasseti* group. However, the latter features are considered plesiomorphic and do not demonstrate relationships of *A. obscurior* sp.n to this group. The new species has distinctive male genitalia (gonostylus, hypandrium, saccus) as well as female terminalia (S6, S7) and can also be identified according to wing pattern and venation, dark mouthparts and palpus, dark brown apical part of hind femur and blackish brown knob of haltere (see also key).

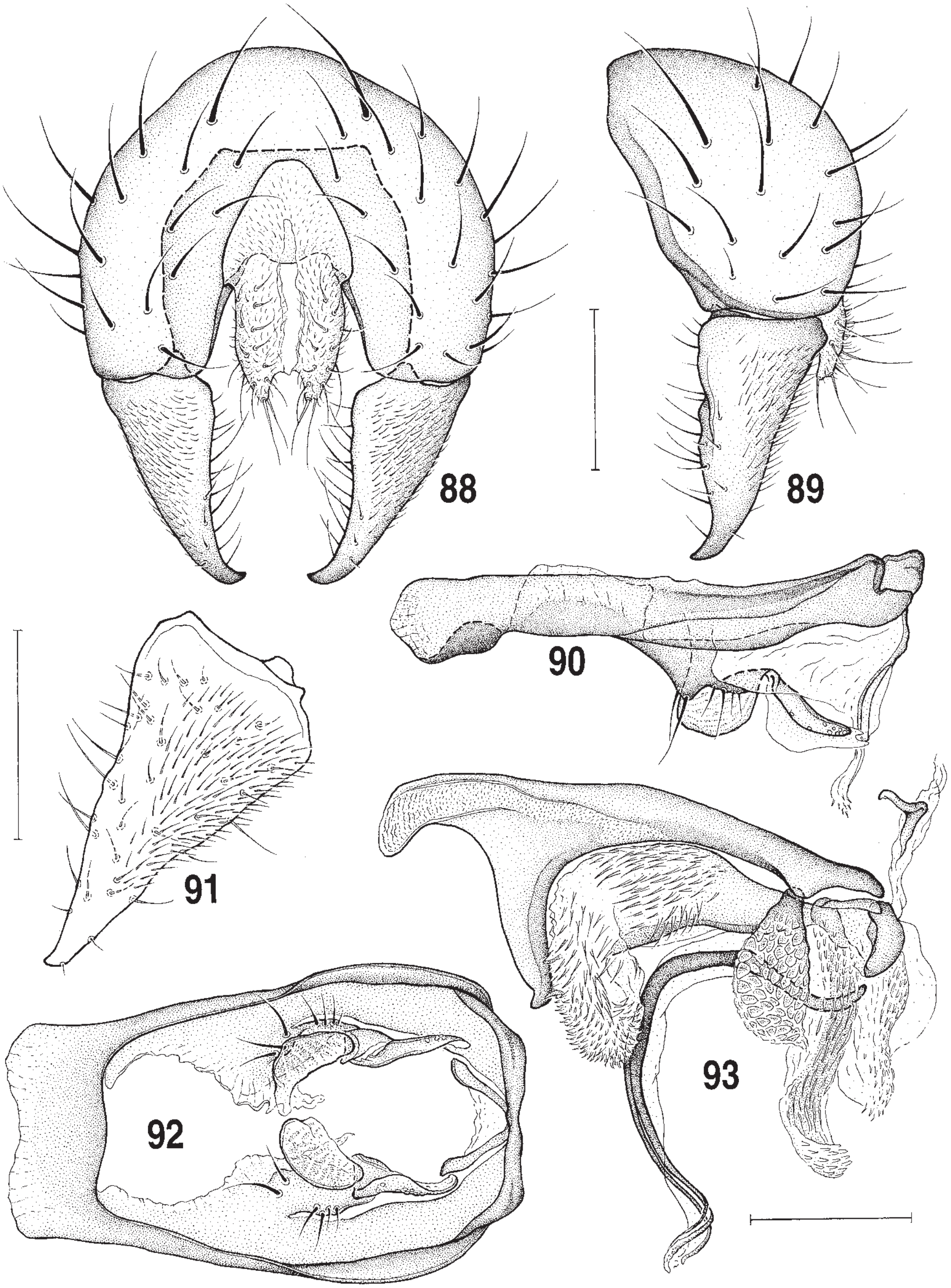
Biology: All type specimens were collected in January in the Semiliki Forest.

Distribution: The species is known only from Uganda.

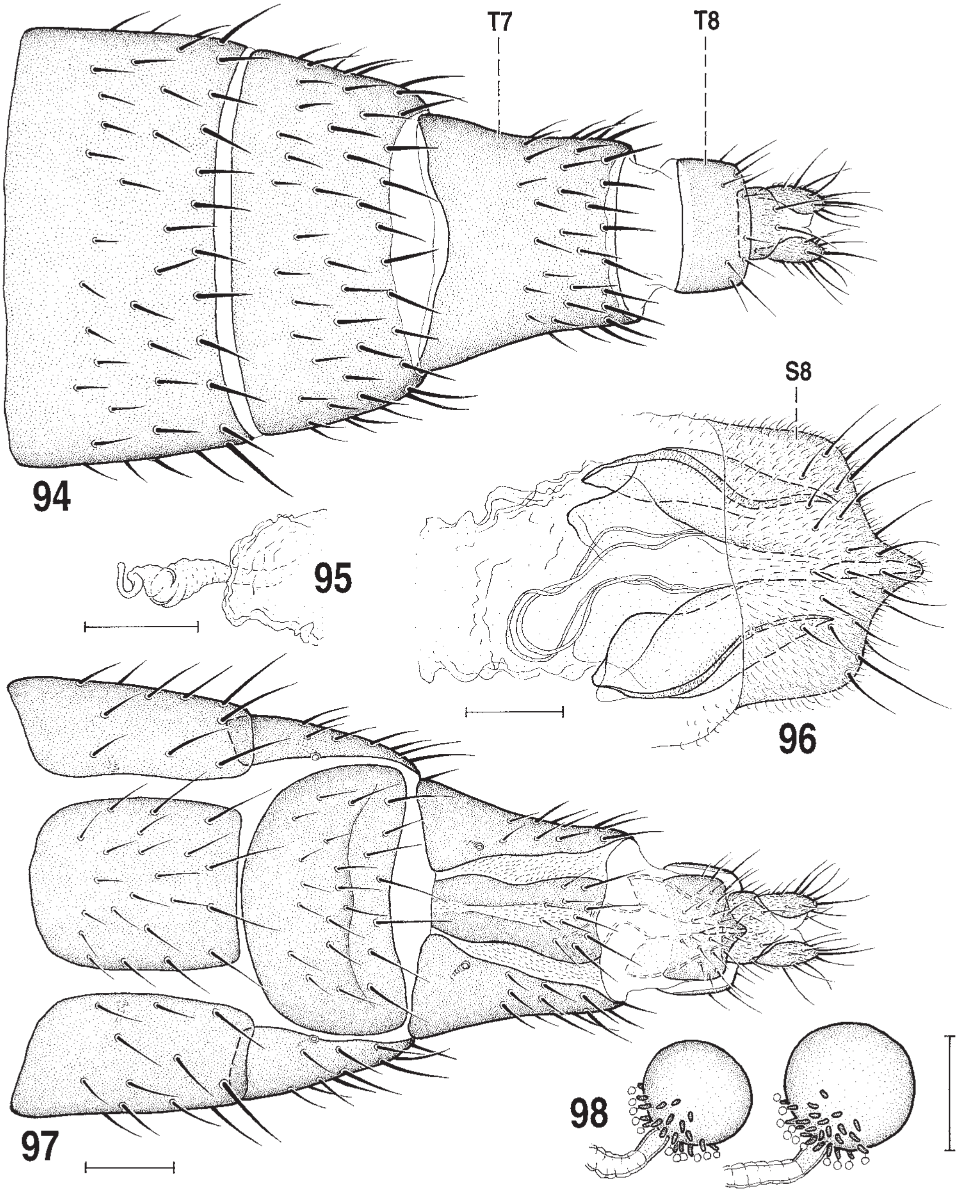
Amygdalops sparsus sp. n.

(Figs 88–98, 130)

Type material: Holotype male, labelled: ‘UGANDA: S.W., Semiliki Forest, 1250 m, 8.i.1996, 1 male, I. Yarom & A. Freidberg’ leg. (TAUI, genit. intact). Paratypes: CAMEROON: Rt. N4, 120 km NW Yaounde, 5.xi.1987, 1 male, A. Freidberg leg. (TAUI, genit. prep.); N’Kolbisson, 11.iv.1964, light trap, 1 female, ? Tsacas leg. (MNHN, genit. prep.); IVORY COAST: Lamto, frange *Aframomum*, Gal-E_2, 20.i.1071, 1 male,



Figs 88–93. *Amygdalops sparsus* sp.n., male paratype (Uganda). 88. External genitalia, caudal view. 89. Same, lateral view. 90. Hypandrium and associated structures, lateral view. 91. Gonostylus, sublateral view (widest extension). 92. Hypandrium and associated structures, ventral view. 93. Aedeagal complex, lateral view. Scales = 0.1 mm.



Figs 94–98. *Amygdalops sparsus* sp.n., female paratype (Uganda). 94. Postabdomen + 5th segment, dorsal view. 95. Ventral receptacle, lateral view. 96. Internal sclerites and S8, ventral view. 97. Postabdomen + 5th segment, ventral view. 98. Spermathecae. Scales: Figs 94, 97 = 0.1 mm, others = 0.05 mm. For abbreviations see text.

A. Lachaise leg. (MNHN, genit. prep.); UGANDA: same data as for holotype, 4 males 4 females (TAUI, 1 male 1 female SMOC, genit. prep.).

Etymology: The name ‘sparsus’ (= Lat. spotted) is selected for the species which has strikingly variegated wings with white spots.

Description: Male.

Total body length 1.67–2.00 mm; bicolorous, blackish brown and pale yellow.

Head: As high as long. Occiput dark to blackish brown. Frons blackish brown except for yellow anterior fifth. Frontal triangle not very narrow, reaching only over half of frons, bare and shiny including ocellar triangle. Orbit also bare and shining dark brown, with only anterior fifth yellow. Stripes between orbits and frontal triangle dark grey microtomentose and dull. Face ochreous; narrow parafacialia and gena white and silvery white microtomentose; gena with ochreous ventral margin and ventral part of postgena pale yellow. Mouthparts yellow but palpus darkened, ochreous brown. Cephalic chaetotaxy: pvt short, with apices crossed; vti about two-thirds of vte; vte and posterior ors subequal and longest among cephalic setae; oc as long as vti; 2 long ors, anterior slightly to distinctly shorter than posterior) and 2 usual ors microsetulae in front of anterior ors; 1–2 pairs of microsetulae medially in front of frontal triangle; 1 long vi and 1 subvibrissa being as long as two-thirds of vi; peristomal setulae few and becoming longer anteriorly; postoculars very minute; seta on palpus distinct. Eye with longest diameter about 1.5 times as long as shortest one. Gena very narrow; its smallest height about 0.08 times as long as shortest eye diameter. Antenna yellow, with dorsal corner of pedicel and outer side of 1st flagellomere (particularly in basal half) darkened, ochreous. Arista about 1.9 times as long as antenna, long pectinate, particularly dorsobasally.

Thorax: Markedly narrower than head. Mesonotum including scutellum dark to blackish brown, subshiny; humeral and notopleural areas also brown. Pleural part of thorax with dark brown dorsal band; ventral portion of pleura pale yellow. Thoracic chaetotaxy: 1 very small prs; 2 dc, posterior very long and as long as apical sc, anterior very reduced, only slightly longer than dc microsetae in front of it; 2 sc, laterobasal short but markedly longer than anterior dc; 1 ppl, very minute or indistinct; 2 stpl, anterior weak, about two-thirds of more robust posterior one; setae on ventral part of sternopleuron few and hair-like. Scutellum slightly convex dorsally. Legs yellow to pale ochreous-yellow, f_2 and f_3 with darkened distal third or two-fifths, brown on f_2 and dark brown on f_3. Chaetotaxy of legs as in other relatives but posteroventral setae on f_1 relatively few; f_3 with posteroventral row of setae which are very short and dense in apical third. Wing (Fig. 130) pattern characterised by dark apical third and by 2 rounded, white, iridescent spots, one between R_{2+3} and R_{4+5} in front of terminal dark spot, the other behind posterior (dm-cu) cross-vein; subapical dark spot large. R_{2+3} and R_{4+5} very strongly sinuous because of anterior white spot; M relatively straight. Discal (dm) cell relatively long, with r-m situated in front of its middle. A_1 very short in consequence of reduced anal lobe. Wing measurements: length 1.78–2.06 mm; width 0.53–0.64 mm, $Cs_3 : Cs_4$ = 2.00-2.59, r-m\dm-cu : dm-cu = 2.92–3.33. Haltere with pale yellow stem and blackish brown knob.

Abdomen: Preabdominal terga large, completely blackish brown. T6 small, transverse, desclerotised and very pale ochreous pigmented. Preabdominal sterna brown, becoming darker and larger (wider) posteriorly, S5 the largest sternum, posteriorly widened and with emarginate posterior margin. S6–S8 blackish brown, dorsolaterally fused; S6 with slender ventral projection reaching to right side of abdomen.

Genitalia: Epandrium hemispherical, medium-long (Figs 88, 89), setose also in anterior half; all setae relatively fine, dorsomedial pair only slightly longer than others; anal opening small, rounded subtriangular (Fig. 88). Cercus medium-long, finely setose. Medandrium (Fig. 88) comparatively wide and high. Gonostylus (Fig. 91) long compared to epandrium, elongately triangular (in widest extension view), strongly tapered apically, apex slightly bent anteriorly but not very acute; micropubescence covering most of outer side except apex, dorsal and anterior margins; inner side with longer setae, particularly at anterior margin. Hypandrium (Figs 90, 92) relatively moderate, heavily sclerotised, with hyaline, membranous internal lobes; transandrium simple and slender, slightly concave ventrally; caudal process composed of 2 long and slender band-like sclerites, which are fused dorsally and divergent ventrally. Pregonite (Fig. 90) unusually protruding ventrally, dark, with 2 setae on anterior bulge and 4–5 shorter on posterior slender projection. Postgonite (Figs 90, 92) slightly bent, slender, with blunt apex and several small sensilae on outer surface as usual; basal sclerite attached to postgonite large, pale pigmented and rounded, with finely wrinkled microsculpture. Aedeagal part of folding apparatus attached to base of phallapodeme (Fig. 93) darkened dorsally, provided by flat, tooth-like, densely arranged spines; connecting sclerite long, and pale pigmented. Basal membrane (Fig. 90) practically unarmed, without spines or tubercles. Aedeagal complex (Fig. 93) with moderate phallapodeme, having usual bifurcate base and simple apex. Aedeagus with small (slightly longer than high) phallophore and large distiphallus. Base of distiphallus bare. Saccus of distiphallus large, except for sclerotised base membranous and covered by spines, which are small and dense on apex, longer on most other membranous part; basal pigmented part and short intervening area at apical two-thirds of saccus bare. Filum of distiphallus formed by 2 dark, very slender, stripe-like, twisted and closely attached sclerites diverging in membranous dilated apex. Ejacapodeme small, with slender digitiform projection.

Female differs from male as follows:

Total body length 1.98–2.62 mm.

Anterior margin of frons, face, dorsal mouthparts and palpus distinctly darker than in male, pale to dark brown. Antenna dark ochreous to pale brown. Humeral callus sometimes lighter brown than mesonotum. f_3 posteroventrally simply setulose. Wing measurements: length 2.14–2.50 mm, width 0.67–0.75 mm, $Cs_3 : Cs_4$ = 2.18–2.50, r-m\dm-cu : dm-cu = 2.88–3.35. Abdomen with preabdominal terga shorter and more transverse, blackish brown. Preabdominal sterna all brown and very narrow (except for S1–S2 all others longer than broad) in contrast to very broadened S6 (see Fig. 97).

Postabdomen (Figs 94, 97) relatively slender and entire dark brown. T6 large, only slightly narrower and shorter than T5, densely shortly setose. S6 broad and transverse, markedly wider than S5, and about as wide as T7 anteriorly. T7 dark brown, narrow, posteriorly conically tapered, and reaching on ventral side of abdomen, with anteroventral corners meeting ventrally with anterior part of S7. S7 very slender, elongate, with sinuous lateral margins and pale pigmented medial stripe and setae on slightly dilated posterior third (Fig. 97). T8 small, plate-shaped, with rounded posterior corners and few fine setae at posterior margin. S8 dark, distinctly narrower than T8, finely setulose, posteromedially strongly projecting and with narrow mediodorsal incision as usual. T10 small, moderate in length, dark and bare except for sparse microtomentum at indistinct posterior margin and with a pair posteromedial setae. S10 paler and slightly larger than T10, roughly pentagonal, micropubescent, with longer setulae at posterior margin. Internal sclerotisation of genital chamber composed of distinctly pigmented, flat but crooked posterior sclerites (two partly fused), medial double finely ribbon-like structure (see Fig. 96) and of transverse, strongly twisted, unpigmented anterior ring-shaped structure (not figured but similar to that of *A. undulatus* sp.n.—cf. Fig. 107). Genital opening surrounded by fine dense spines. Ventral receptacle (Fig. 95) membranous, formed by clavate pouch on proximal tube and vermicular, strongly twisted terminal projection. Spermathecae (1+1), spherical, one distinctly larger than the other (Fig. 98), each with fine blunt spines inserted on basal third of spermatheca; duct cervix well developed, relatively long. Cerci smaller and more slender than in *A. undulatus* sp.n., with moderate setosity.

Discussion: *A. sparsus* sp.n. forms together with *A. obscurior* sp.n., *A. undulatus* sp.n. and *A. poecilus* sp.n. a species group characterised by similar wing pattern and strongly sinuous veins R_{2+3} and R_{4+5}. However, it most resembles its closest relative, *A. undulatus* sp.n., both in external features and male and female genitalia. This sister-pair is defined by several synapomorphies, eg. posteroventrally projecting postgonite, unarmed basal membrane, apex of saccus of distiphallus densely finely spinose, narrow and medially unpigmented female S7. The differences between these species are stressed under *A. undulatus* sp.n. below.

Biology: Type specimens were collected in January, April and November.

Distribution: Ivory Coast, Cameroon, Uganda.

Amygdalops undulatus sp. n.

(Figs 99–109, 131)

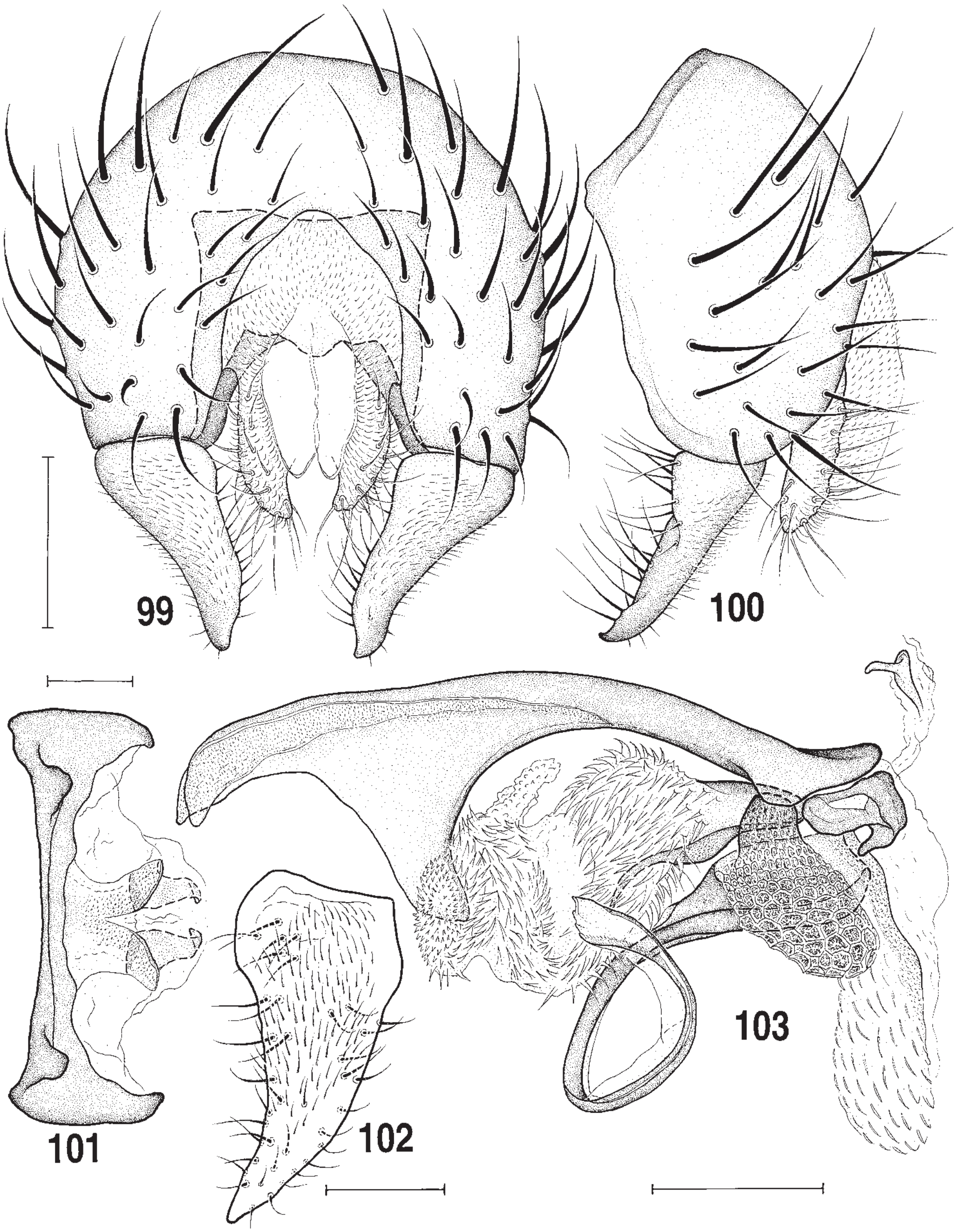
Type material: Holotype male, labelled: ‘Mandraka, ca 19ºS 48ºE, 11–13.x.1987, SFMcE. JRD. SA’ (AMSA, genit. intact). Paratypes: MADAGASCAR: same data as for holotype, 2 males 2 females; Andasibe, ca 19ºS 48ºE, 13–15.x.1987, 2 males, SFMcE, JRD, SA leg. (AMSA, most with genit. prep.).

Etymology: The species is named ‘undulatus’ (= Lat. wavy) because it has wing with strongly sinuous radial veins.

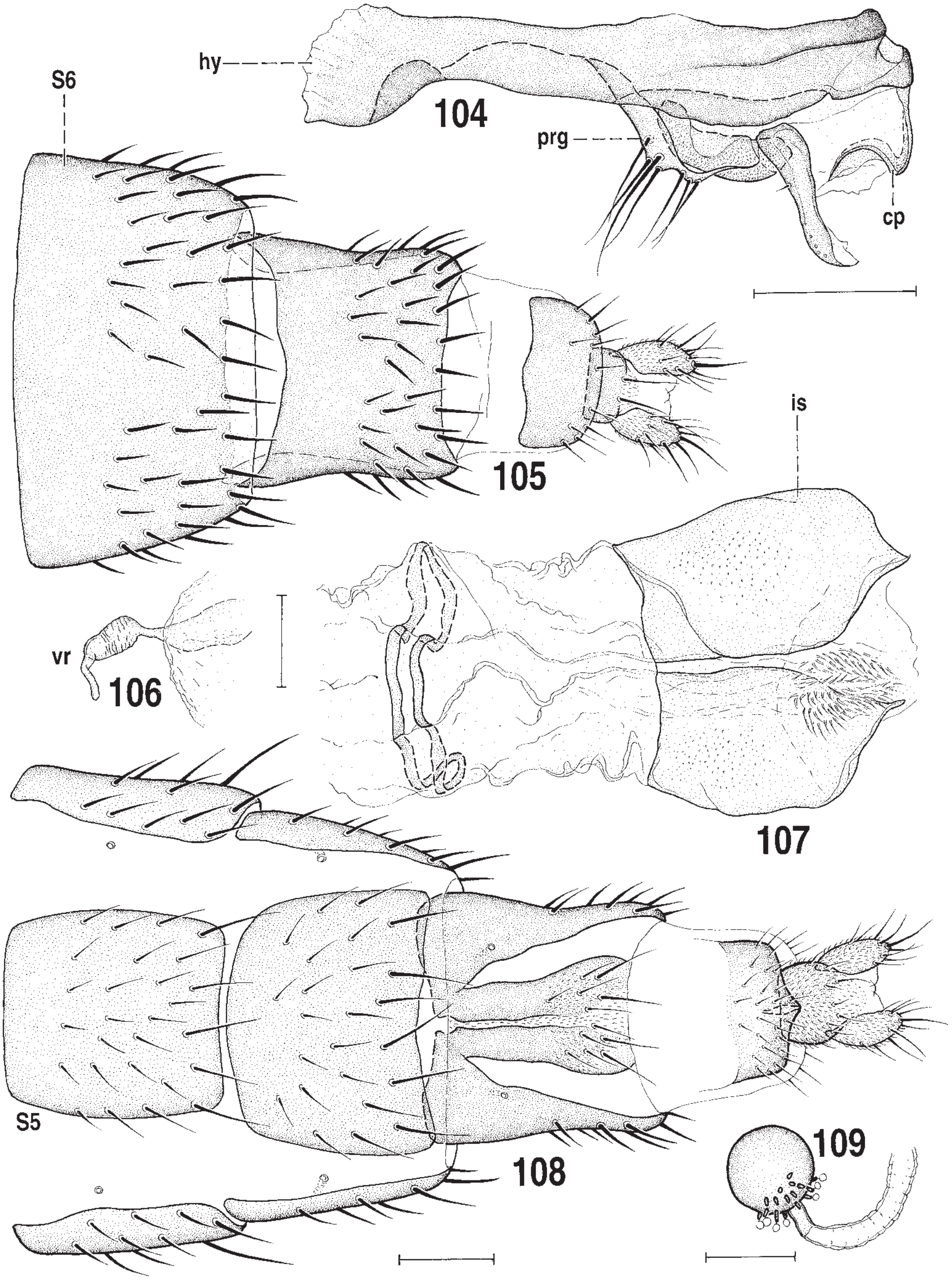
Description: The species is very close to *A. sparsus* sp.n. but more resembles *A. obscurior* sp.n. in some outer, mainly colour features. Therefore only differences against *A. sparsus* sp.n. are mentioned below.

Total body length 1.86–2.30 mm.

Head: As long as or slightly longer than high. Frons anteriorly paler yellow. Face yellowish ochreous and mouthparts including palpus yellow. Cephalic chaetotaxy as in *A. sparsus* sp.n. Eye with longest diameter 1.4 times as long as shortest one. Smallest height of gena 0.09 times as long as shortest eye diameter. Antenna distinctly paler yellow and also darker parts of pedicel and 1st flagellomere at most pale ochreous. Arista 1.8 times as long as antenna.



Figs 99–103. *Amygdalops undulatus* sp.n., male paratype (Madagascar). 99. External genitalia, caudal view. 100. Same, lateral view. 101. Transandrium, caudal view. 102. Gonostylus, sublateral view (widest extension). 103. Aedeagal complex, lateral view. Scales: Fig. 102 = 0.05 mm, others = 0.1 mm.



Figs 104–109. *Amygdalops undulatus* sp.n., male and female paratypes (Madagascar). 104. Hypandrium and associated structures, lateral view. 105. Postabdomen, dorsal view. 106. Ventral receptacle, lateral view. 107. Internal sclerites, ventral view. 108. Postabdomen + 5th segment, ventral view. 109. Spermatheca. Scales: Figs 104, 105, 108 = 0.1 mm, others = 0.05 mm. For abbreviations see text.

Thorax: With brown notopleural area but humeral callus distinctly lighter, ochreous to pale brown. Thoracic chaetotaxy as in *A. sparsus* sp.n., including strongly reduced anterior dc macroseta. Legs yellow, only f_3 with brown darkened distal third, thus similar in colour to those of *A. obscurior* sp.n. Chaetotaxy of legs as in *A. sparsus* sp.n. Wing (Fig. 131) most similar to that of *A. sparsus* sp.n., including strongly sinuous R_{2+3} and R_{4+5} but area in front of the anterior white spot lighter, almost as in *A. obscurior* sp.n. Wing measurements: length 2.06–2.42 mm; width 0.63–0.73 mm, $Cs_3 : Cs_4$ = 2.38–2.63, r-m\dm-cu : dm-cu = 2.73–3.40. Haltere with yellow stem and blackish brown knob.

Abdomen: As in *A. sparsus* sp.n., but S5 slightly more transverse and with deeper posterior emargination. Postabdominal sterna S6–S8 highly similar to those of *A. sparsus* sp.n.

Genitalia: Larger than in *A. sparsus* sp.n. Epandrium hemispherical, medium-long (Figs 99, 100), with denser and thicker setae, two or three pairs of them slightly longer than others; anal opening small, rounded pentagonal (Fig. 99). Cerci medium-long, more projecting ventrally and more separate each from other. Medandrium (Fig. 99) comparatively high but narrower than in *A. sparsus* sp.n. Gonostylus (Fig. 102) shorter (compared to epandrium) than in *A. sparsus* sp.n., elongately subtriangular (in widest extension view), with concave anterolateral margin, not very acute; micropubescence covering most of outer side as in *A. sparsus* sp.n.; inner side with more and longer setae than in *A. sparsus* sp.n. (see Fig. 100). Hypandrium (Fig. 104) very similar to that of *A. sparsus* sp.n., with smaler membranous internal lobes; transandrium (Fig. 101) posteromedially simple, straight; caudal process formed by two pale sclerites which are proximally fused each to other and to transandrium, and ventrally strongly bent anteriorly, with distal part somewhat sinuous (see Fig. 104). Pregonite (Fig. 104) protruding ventrally as in *A. sparsus* sp.n., but with distinctly longer setae arranged in two groups, 4 longer on anterior bulge, 3 shorter on posterior projection. Postgonite (Fig. 104) very slightly sinuous, slender, with membranous bidentate apex, small setula in basal third anteriorly and several sensilae on outer surface as usual; basal sclerite attached to postgonite large, pale pigmented, longer than in *A. sparsus* sp.n. Aedeagal part of folding apparatus attached to base of phallapodeme (Fig. 103) darkened dorsally, provided by dense, flat, granulose tubercles; connecting sclerite very slender and pale pigmented, finely granulose. Basal membrane without spines or tubercles as in *A. sparsus* sp.n. Aedeagal complex (Fig. 103) highly similar to that of *A. sparsus* sp.n., differing only in thicker spines on saccus of distiphallus and distinctly dentate apex of filum.

Female differs from male as follows:

Total body length 2.34–2.62 mm.

Antenna (1st flagellomere in particular) somewhat darker but face as pale as in male. Palpus paler brown than in *A. sparsus* sp.n. Humeral callus ochreous to ochreous brown. Wing measurements: length 2.46–2.58 mm, width 0.73–0.78 mm, $Cs_3 : Cs_4$ = 2.21–2.30, r-m\dm-cu : dm-cu = 2.70–3.06. Abdomen as in *A. sparsus* sp.n. but having wider, less elongate S3–S5 which are about as long as wide.

Postabdomen (Fig. 105, 108) resembling that of *A. sparsus* sp.n. with differences as follows. S6 only slightly wider than S5 and about as wide as T7 anteriorly (Fig. 108), thus distinctly narrower and less transverse than that of *A. sparsus* sp.n. T7 narrow but less tapered posteriorly, with anteroventral corners fused ventrally with anterior part of S7. S7 as in *A. sparsus* sp.n. but more dilated posteriorly and fused with T7 anteriorly. T8 small, plate-shaped, more transverse than that of *A. sparsus* sp.n. and S8 slightly wider. T10 and S10 as in *A. sparsus* sp.n. Internal sclerotisation of genital chamber with flat but crooked posterior sclerites (seemingly single but actually two, largely fused together on each side), very fine medial ribbon-like structure (see Fig. 107) and transverse, strongly twisted, unpigmented anterior ring-shaped structure (Fig. 107), better developed than in *A. sparsus* sp.n. Genital opening surrounded by fine dense spines. Ventral receptacle (Fig. 106) membranous, formed by oval, transversely ringed pouch on narrow proximal tube and digitiform, ventrally directed, terminal projection. Spermathecae 1+1 (Fig. 109), spherical, both of the same size, each with small and fine blunt spines inserted on basal third of spermatheca; duct cervix well developed, medium-long. Cerci distinctly more robust than in *A. sparsus* sp.n.

Discussion: *A. undulatus* sp.n. is a Madagascan sister-species of *A. sparsus* sp.n. It differs from the latter species by somewhat larger size, yellow male palpus, only hind femur with brown distal annulus and by some details of the male genitalia (slightly different and longer setose gonostylus, long setae on pregonite, strongly sinuously bent caudal process of transandrium etc.) and female postabdomen (S6 markedly narrower and less transverse, S7 anteriorly fused with T7 and posteriorly more dilated, cercus more robust).

Biology: All type specimens were collected in October.

Distribution: Madagascar.

Amygdalops poecilus sp. n.

(Figs 110–121, 132)

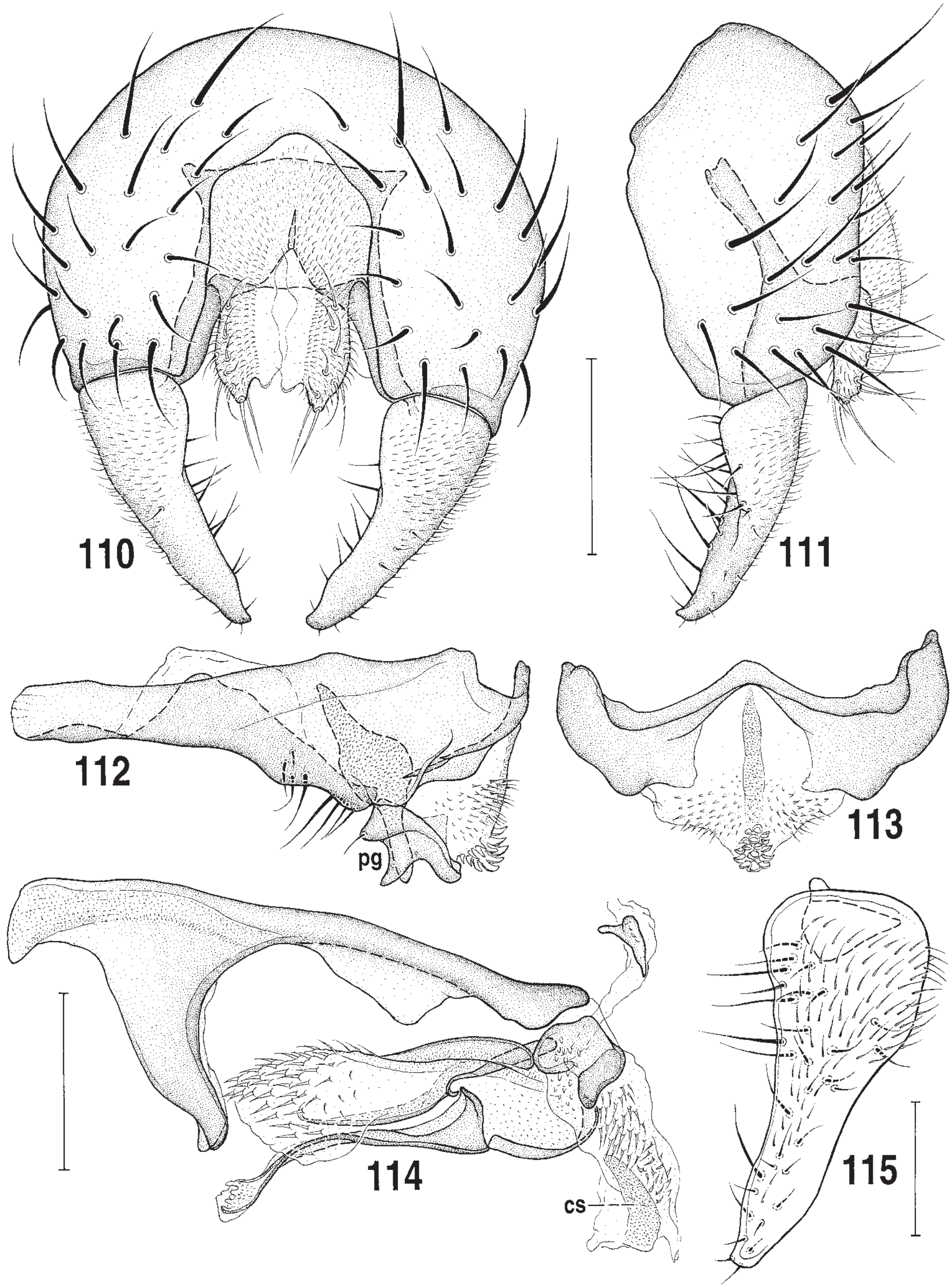
Type material: Holotype male, labelled: ‘Dhlinza Forest, Eshowe, Zululand, South Africa. B. & P. Stuckenberg, 5–6. April 1960’ (NMSA, genit. prep.). Paratypes: SOUTH AFRICA: Natal, Pietermaritzburg, Town Bush, 9.vi.1979, 1 female, R. Miller leg. (NMSA, genit. prep.). ZAIRE (REPUBLIC CONGO): Parc National Albert, Mont Hoyo, 1280 m, sur plantes bases, 7–15.vii.1955, 1 male 7 females, P. Vanschuytbroeck leg. (MRAC, SMOC, genit. prep.); Mont Hoyo, grotte Ikonongi, 1215 m, 9.viii.1955, 1 female, P. Vanschuytbroeck leg. (MRAC, genit. prep.); Parc National Albert, Secteur Tshiaberimu, Riv. Mbulikerere, affl. dr. Talia N, 2720 m, 26–28.viii.1953, 1 male, P. Vanschuytbroeck & V. Hendrickx leg. (MRAC, genit. prep.). Most specimens from Zaire more or less damaged.

Etymology: The species is named ‘poecilus’ (= Greek variegated) owing to its variegated wing.

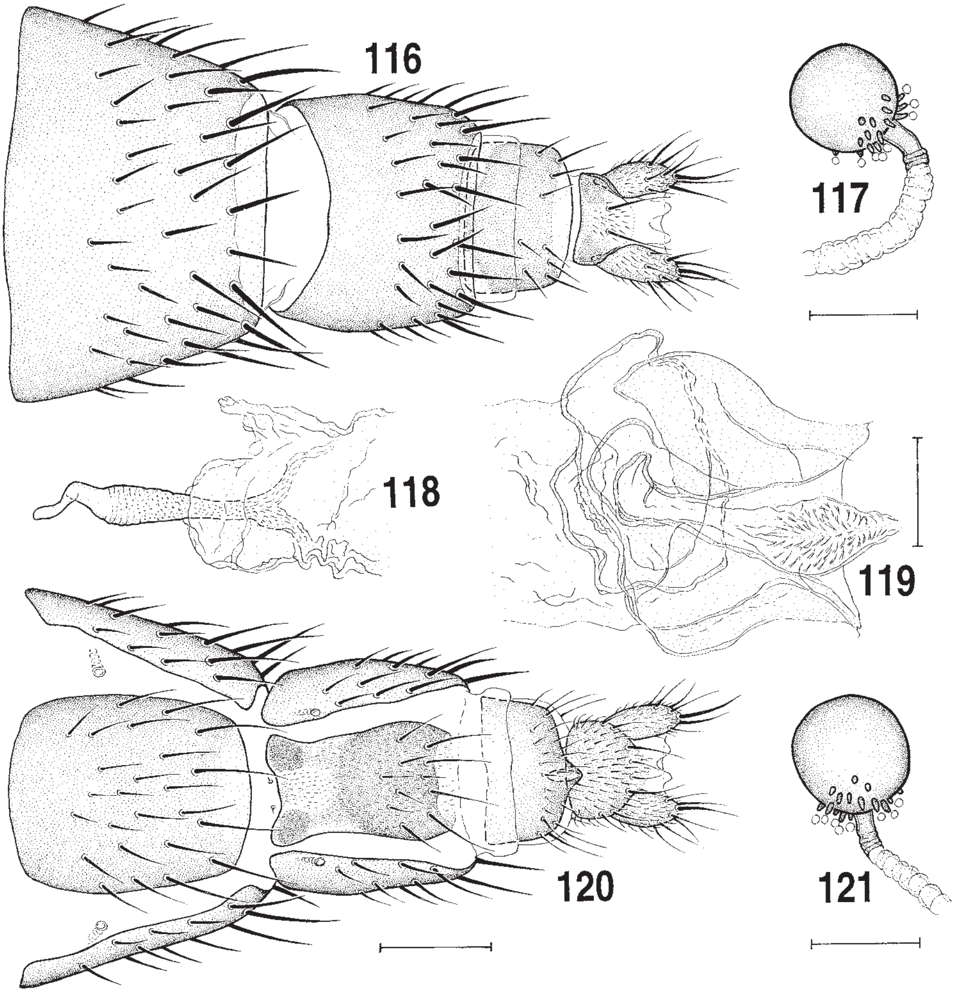
Description: Male.

Total body length 1.98–2.50 mm; bicolorous, dark brown and yellow.

Head: Somewhat higher than long. Occiput dark brown, with some silvery grey microtomentum in medial concavity. Frons dark brown, only anterior fourth ochreous to yellow. Frontal triangle narrow, reaching to anterior third of frons and shiny including ocellar triangle; also orbit shiny to subshiny, only darker microtomentose stripes between



Figs 110–115. *Amygdalops poecilus* sp.n., male holotype. 110. External genitalia, caudal view. 111. Same, lateral view. 112. Hypandrium and associated structures, lateral view. 113. Transandrium, caudal view. 114. Aedeagal complex, lateral view. 115. Gonostylus, sublateral view (widest extension). Scales: Fig. 115 = 0.05 mm, others = 0.1 mm. For abbreviations see text.



Figs 116–121. *Amygdalops poecilus* sp.n., female paratype (South Africa). 116. Postabdomen, dorsal view. 117. Spermatheca. 118. Ventral receptacle, lateral view. 119. Internal sclerites, ventral view. 120. Postabdomen, ventral view. 121. Spermatheca. Scales: Figs 116, 120 = 0.1 mm, others = 0.05 mm.

orbits and frontal triangle dull. Face very narrow, ochreous-yellow; parafacialia, gena and postgena yellowish white with silvery white microtomentum. Ventral margin of gena brownish as are also dorsal mouthparts and palpus; ventral mouthparts orange. Cephalic chaetotaxy: pvt small but strongly crossed; vti shorter than vte but relatively long, longer and stronger than oc; vte longest of cephalic setae; 2 long ors (posterior almost as long as vte, anterior distinctly shorter) and 2 usual microsetulae in front of anterior ors; 1–2 pairs of very minute setulae medially in front of frontal triangle; 1 long vi and 1 shorter subvibrissa (about two-thirds of vi); peristomal setulae short except for the foremost one; postocular setulae minute; preapical seta on palpus distinct. Eye with longest diameter 1.4 times as long as shortest one. Gena very narrow; its smallest height 0.08 times as long as shortest eye diameter. Antenna orange yellow, 1st flagellomere somewhat darker, particularly on inner side and around base of arista. Arista 1.95 times as long as antenna, long pectinate, particularly dorsobasally.

Thorax: Narrower than head, brown to dark brown and yellow. Pronotum, mesonotum (including scutellum and notopleural areas) and dorsal part of pleura up to ventral portion of mesopleura brown to dark brown; rest of pleura yellow; thus, the dark dorsal pleural band wider than in all congeners. Thoracic chaetotaxy: 1 small prs; 2 dc, posterior very long and as long as apical sc, anterior very reduced, as in *A. sparsus* sp.n.; 2 sc, laterobasal small, slightly longer than anterior dc; 1 ppl, usually indistinct; 2 stpl, anterior weak, posterior longer and thicker; ventral sternopleural setae few and weak. Scutellum slightly convex dorsally. Legs completely yellow in South African specimens but with brown distal thirds to two-fifths of f_2 and f_3 in specimens from equatorial Africa. Chaetotaxy of legs as in *A. sparsus* sp.n., including shortened setae in posteroventral row on f_3. Wing (Fig. 132) with distinctive pattern and venation characterised 3 rounded, white, iridescent spots (between R_{2+3} and R_{4+5} in front of terminal dark spot, between R_{4+5} and M in distal third of wing and between M and wing margin behind dm-cu cross-vein) and by very strongly sinuous R_{2+3}, R_{4+5} and M. Discal (dm) cell relatively long, with r-m situted in front of its middle. A_1 very short. Wing measurements: length 2.18–2.58 mm; width 0.59–0.75 mm, $Cs_3 : Cs_4$ = 2.21–2.30, r-m\dm-cu : dm-cu = 2.83–3.46. Haltere with yellowish white stem and blackish brown knob.

Abdomen: With large, dark brown preabdominal terga and small, paler brown preabdominal sterna. T6 short, transverse, weakly sclerotised and pale ochreous. Preabdominal sterna narrow, S2–S4 distinctly longer than broad (in specimens from Zaire markedly narrower than in those from South Africa); S5 large, wider than S4, with posterior emargination. S6–S8 blackish brown, dorsolaterally fused; S6 ventrally very short and projecting on right side of abdomen.

Genitalia: Epandrium hemispherical, medium-long (Figs 110, 111), setose in posterior half; setae moderate, 1 dorsomedial pair longer than others; anal opening narrow but high, rounded pentagonal (Fig. 110). Cercus moderate, finely setose. Medandrium (Fig. 110) comparatively high, with projecting dorsolateral corners. Gonostylus (Fig. 115) elongately subtriangular (in widest extension view), strongly tapered in distal half, more slender than in *A. sparsus* sp.n or *A. undulatus* sp.n. with apex bent anteriorly but not very acute; micropubescence covering most of proximal half of outer side, distal half with only a few microsetulae; inner side with long setae, particularly at anterior margin. Hypandrium (Fig. 112) relatively short and high in proximal half, with membranous internal lobes; transandrium (Fig. 113) only medially slender, with deep ventral incision; caudal process formed by unpaired medial band-like sclerite being attached to transandrium by its tapered dorsal tip. Pregonite (Fig. 112) fused with hypandrium, incurved but somewhat protruding ventrally, with 2 groups of setae, each enumerating about 4 setae, those on posteroventral bulge longer. Postgonite (Fig. 112) short, dark, of very peculiar shape, with proximal bulge carrying a setula, large anterior tooth in the middle and shortly bicuspidate apex; basal sclerite attached to postgonite also unusual, large, with a long slender ventral projection (as long as postgonite) and also dorsally tapered, and with finely granulose surface. Aedeagal part of folding apparatus (Fig. 114) unusually reduced, membranous with only very weak tubercles dorsally and fine setulae or spinulae ventrally; connecting sclerite very short, pale, and finely granulose. Basal membrane (Fig. 113) finely spinulose dorsally and armed by a cluster of robust thorn-like tubercles ventrally. Aedeagal complex (Fig. 114) weak, with slender phallapodeme, having besides usual bifurcate base a pair of flat lateral wing-shaped processes in the middle. Aedeagus with small (as long as high) phallophore, and distiphallus, which is strikingly smaller than in all relatives. Base of distiphallus bare, with darker ventral margin. Saccus of distiphallus unusualy small, except for sclerotised base membranous and armed by dense spines restricted to its distal third. Filum of distiphallus also surprisingly short, only slightly sinuous and formed by 2 dark, basally broad, apically very slender stripe-like sclerites terminating into dilated but membranous apex having somewhat dentate margin. Ejacapodeme small, with rather short digitiform projection.

Female differs from male as follows:

Total body length 2.38–3.14 mm.

Face, dorsal mouthparts and palpus darker than in male. f_3 posteroventrally simply setulose. Wing measurements: length 2.58–2.86 mm, width 0.71–0.83 mm, $Cs_3 : Cs_4$ = 2.08–2.54, r-m\dm-cu : dm-cu = 2.60–2.94. Abdomen with preabdominal terga shorter and more transverse, all dark brown. Preabdominal sterna narrow, longer than broad, somewhat paler brown than terga, distinctly lighter than S6 (again, S2–S5 in specimens from Zaire markedly narrower than those of South African specimens).

Postabdomen (Figs 116, 120) relatively slender and entire dark brown pigmented. T6 relatively narrow, tapered posteriorly, densely shortly setose. S6 dark and narrower than T7 (it is only slightly wider than S5 in South African female but distinctly wider than S5 in females from Zaire). T7 dark brown, narrow, anteriorly emarginate, laterally reaching on ventral side of abdomen, with anteroventral corners almost meeting with anterior part of S7. S7 slender, elongate, with sinuous lateral margin and characteristic dark pattern composed of a pair of small anterior rounded spots and a large one covering posterior setose half of sclerite (Fig. 120). T8 relatively large and long in contrast to relatives, plate-shaped, with a few fine setae in posterior rounded corners. S8 dark, very slightly narrower than T8, finely setulose, posteromedially strongly projecting and with narrow mediodorsal incision as usual. T10 small, moderate in length, with dark laterobasal spots, sparse microtomentum restricted to medial area and with a pair of medial setae. S10 larger (particularly longer) than T10, roughly pentagonal, micropubescent, with longer setulae at posterior margin. Internal sclerotisation of genital chamber (see Fig. 119) composed of very pale pigmented, crooked posterior sclerites (two partly fused), medial double fine ribbon-like structure and transverse, twisted, unpigmented (poorly visible) fine anterior ring-shaped structure close to posterior sclerites. Genital opening surrounded by fine dense spines. Ventral receptacle (Fig. 118) membranous, formed by elongate subclavate tube and digitiform, anteroventrally directed projection. Spermathecae 1+1 (Figs 117, 121), spherical, each with very short blunt spines inserted on basal third of spermatheca; duct cervix well developed, long and distinctly ringed in place of its connection with membranous duct. Cerci moderate, medium-long setose.

Discussion: The new species differs markedly from all relatives in having three rounded white spots on wing, strongly sinuous M in addition to R_{2+3} and R_{4+5} and very peculiar male genitalia. Although its gonostylus resembles those of other species of the *A. sparsus* group, its internal genitalia are essentially different (cf. peculiar postgonite and its basal sclerite, (secondarily) unpaired caudal process, reduced aedeagal part of folding apparatus, reduced distiphallus with very short filum, wing-like processes in the middle of the phallapodeme). The female is characterised mainly by dark but very narrow sterna (S2–S6) and distinctive pigmentation of S7.

The specimens from Zaire display some differences against those from South Africa (the type locality) in having brown annulate distal parts of mid and hind femora and narrower and darker preabdominal sterna of both sexes. It is possible, that the two populations represent different taxa, but more material (also from intervening areas) is necessary to demonstrate this hypothesis.

Biology: Adults were collected in April, and June to August. Specimens from Zaire were caught on low vegetation.

Distribution: South Africa, Zaire (Republic Congo).

Key to species of *Amygdalops* of the Afrotropical Region and adjacent islands

1 Wing membrane unicolorous, pale ochreous; apical section of CuA_1 long, 3 times as long as dm-cu (Fig. 122). Mesonotum laterally yellow, with brown scutellum and medial band between dc lines. Female S7 strongly broadened anteriorly (Fig 24). Male unknown .... **A. trivittatus** Frey, 1958

– Wing with dark and pale markings, at least with a dark subapical spot (Figs 123-132); CuA_1 short, at most twice as long as dm-cu. Mesonotum with different colour pattern. Female S7 not or slightly broadened anteriorly 2

2(1) R_{4+5} straight or indistinctly bent. Wing membrane without white spot distal to dm-cu cross-vein, at most with paler (to whitish) area between C and R_{4+5} in front of dark subapical spot (Figs 123-128) 3

– R_{4+5} distinctly sinuous and wing membrane with a rounded white iridescent spot between R_{2+3} and R_{4+5} and between M and wing margin distal to dm-cu cross-vein (Figs 129-132) 9

3(2) Haltere pale yellow including knob 4

– Haltere ochreous, with brown to dark brown knob 6

4(3) Frons medially distinctly darker (ochreous to brown) than orbits (yellow to ochreous), the latter covered by whitish silver microtomentum in anterior half (up to posterior ors). R_{4+5} surrounded by darker band contrasting with pale anterior marginal area (Fig. 123) 5

– Frons (including orbits) completely brown in posterior two-thirds; anterior third of frons and relevant part of orbit yellow, the latter without silvery white microtomentum. No darkened band along R_{4+5}, entire membrane rather uniformly pale brown tinged, only subapical spot darker (Fig. 125). Gonostylus subtriangular, with simple apex (Fig. 39); basal sclerite attached to postgonite dark and ventrally projecting (Fig. 38); apical part of saccus without spines (Fig. 40). Female S7 with pale central spot and dark anteromedial cuspidate structures (Fig. 42) .... **A. simplicior** sp.n.

5(4) Gonostylus short and blunt, not tapered apically (Fig. 27); saccus of distiphallus with very short and dense spinulae (Fig. 26). Female S7 (Fig. 33) simply dark pigmented in anterior three-fourths and with unpigmented posterior margin. **A. obtusus** sp.n.

– Gonostylus proximally broad but distally strongly tapered, with a preapical anterior tooth and narrow, but not acute, apex (Figs 3, 47); saccus covered by fine long spines (Fig. 7). Female S7 (Figs 14, 46) with bipartite (medially divided) pigmentation and poorly defined posterior margin .... **A. thomasseti** Lamb, 1914

6(3) Frons medially distinctly darker (ochreous to brown) than orbits (yellow to ochreous), the latter covered by whitish silver microtomentum in anterior half (up to posterior ors). See also couplet 5 .... **A. thomasseti** Lamb, 1914, dark form

– Frons including orbits all brown to dark brown in posterior two-thirds; orbit yellow in anterior fourth or third but never silvery white microtomentose, posterior part of orbit brown and more orless shining 7

7(6) Occiput brown to ochreous brown, only medially and spots around bases of vti and vte pale ochreous. Humeral and notopleural areas yellow to orange, contrasting with dark brown mesonotum. Gonostylus elongately suboblong, with tapered but rounded apex (Fig. 70); male cercus long (Fig. 67); caudal process of transandrium with paired sclerites, each having lateral process (Fig. 68); saccus of distiphallus (Fig. 69) with thick thorn-like spines. Female S7 (Fig. 73) with unpigmented central area; spermathecae short pyriform, with dark curved spines on surface (Fig. 74) .... **A. nigrinotum** Sueyoshi & Roháček, 2003

– Occiput completely brown to dark brown. At most humeral callus ochreous, notopleural area darkened, at most slightly paler than mesonotum. Male cercus shorter; saccus of distiphallus finely spinose, sclerites of caudal process without lateral projections 8

8(6) Frons dark brown except for anterior fifth; vti very short, only about half lenght of vte. Male S5 darker than S4, posteriorly widened and emarginate. Gonostylus small (Fig. 65), with acute and anteriorly bent apex and sharp edge-like keel on outer side. Transandrium robust (Fig. 63) and sculptured by transverse ridges. Phallapodeme with laterally projecting curved processes near base (Fig. 64). Female unknown .... **A. acer** sp.n.

– Frons brown, with anterior third yellow to orange; vti longer, about two-thirds of vte. Male S5 not darker than S4, pale ochreous and simple posteriorly. Gonostylus long (Fig. 51), with distinct posterolateral concavity (Fig. 50). Transandrium less robust, without surface sculptures (Fig. 54). Phallapodeme basally without long processes. Female with dark palpus and mouthparts. Female S7 narrow, elongate, simply pigmented (Fig. 59) .... **A. major** sp.n.

9(2) Wing (Fig. 132) with 3 rounded white iridescent spots, i.e. also with a subapical one between R_{4+5} and M in addition to two usual (anterior and posterior) near middle of wing. M strongly sinuous. Postgonite (Fig. 112) unusually short and angular; caudal process of transandrium with unpaired slender sclerite

(Fig. 113); distiphallus with both saccus and filum reduced, very short (Fig. 114). Female with very narrowed and dark S2–S6 and with distinctive S7 (Fig. 120) .... **A. poecilus** sp.n.

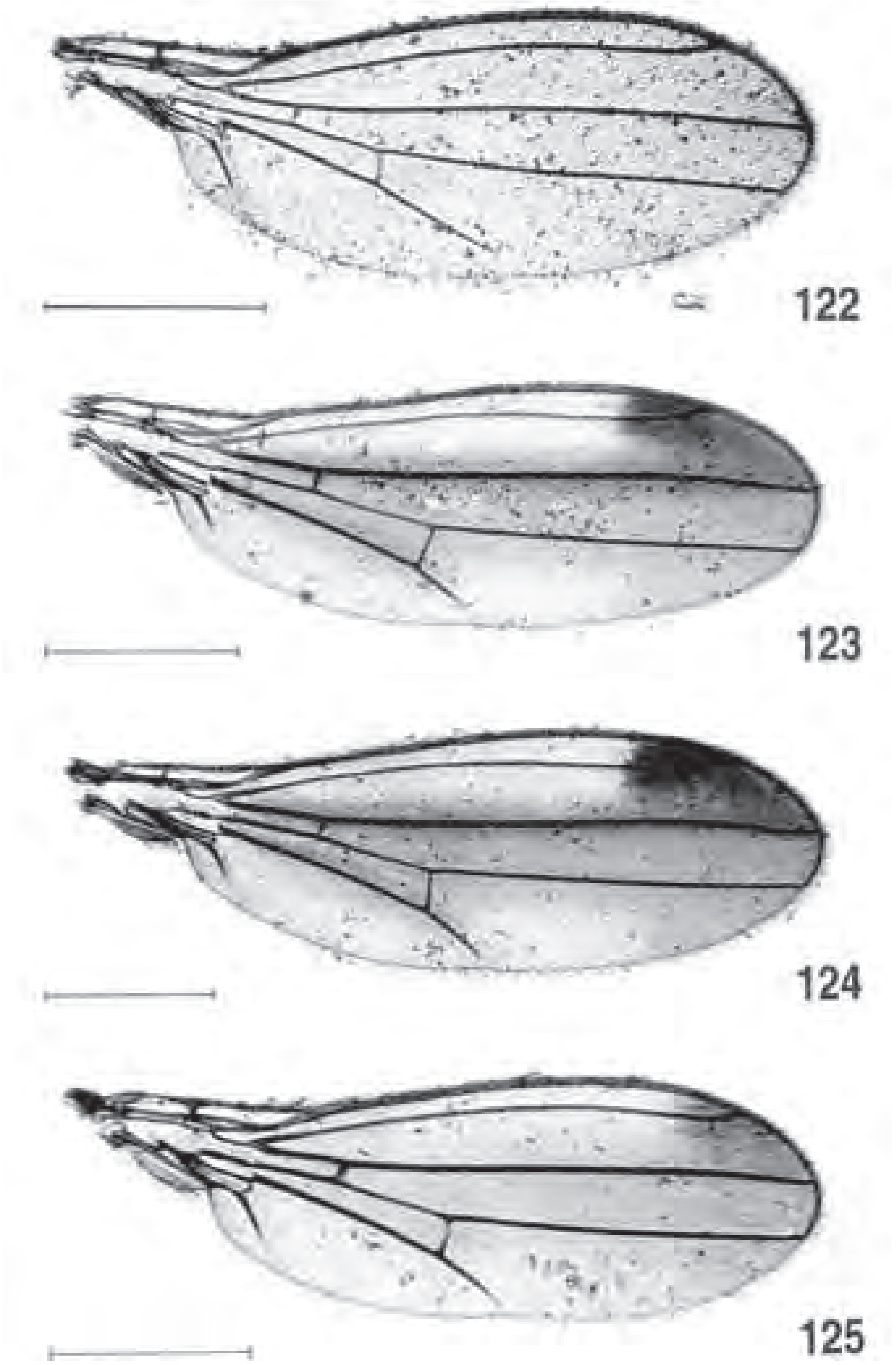
– Wing (Fig. 130) with only 2 rounded white iridescent spots, dark between R_{4+5} and M. M slightly to indistinctly sinuous. Postgonite simple, elongate; caudal process with 2 sclerites, distiphallus large. Female S2–S6 broader and S7 with different pigmentation (Figs 86, 97) 10

10(9) Anterior rounded white spot confluent with large pale area proximal to it; M slightly sinuous (Fig. 129). Anterior dc about as long as laterobasal sc. Gonostylus robust, broad proximally (Fig. 80). Hypandrium with robust posterolateral bulging part (Fig. 79); pregonite incurved, not projecting ventrally (Fig. 79). Female S7 (Fig. 86) broad, anterolaterally broadly fused with T7 and posteriorly forming a separate, pale, oblong plate .... **A. obscurior** sp.n.

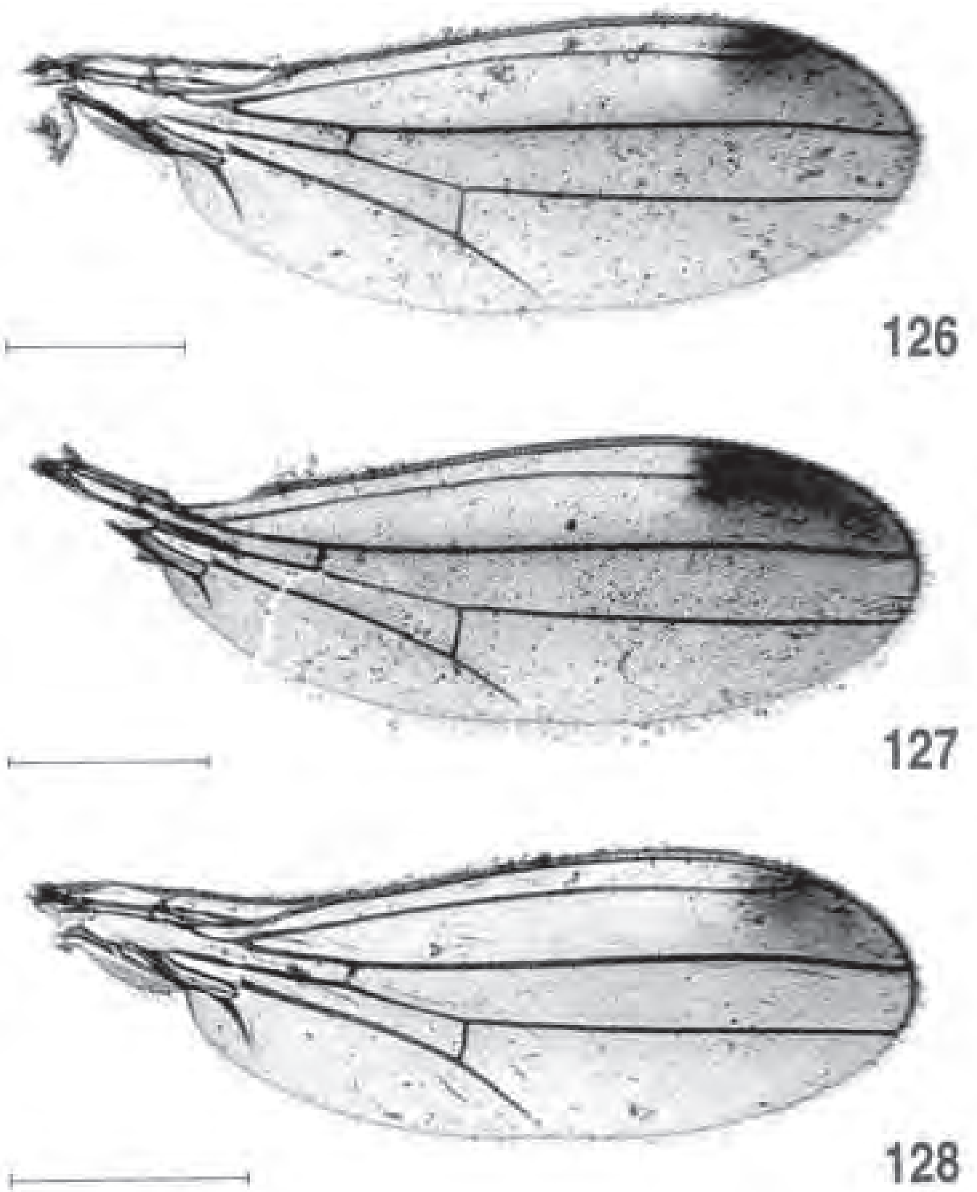
– Anterior white iridescent spot more or less separate from proximal pale area (Fig. 130); M hardly sinuous. Anterior dc reduced to microseta, distinctly shorter than laterobasal sc. Gonostylus (Figs 91, 102) very slender, elongate triangular. Hypandrium not bulging posteroventrally (Fig. 90), and pregonite projecting ventrally. Female S7 narrow, medially with pale stripe (Fig. 97) 11

11(10) Palpus dark, ochreous brown in male, brown in female. Both mid and hind femora with dark brown distal annulus. Gonostylus with straight anterior margin and finer setae (Figs 89, 91). Caudal process of transandrium simple and pregonite with short setae (Fig. 90). Female S6 broader, more transverse and S7 only meeting with T7 anterolaterally, little dilated posteriorly (Fig. 97); cercus smaller and more slender .... **A. sparsus** sp.n.

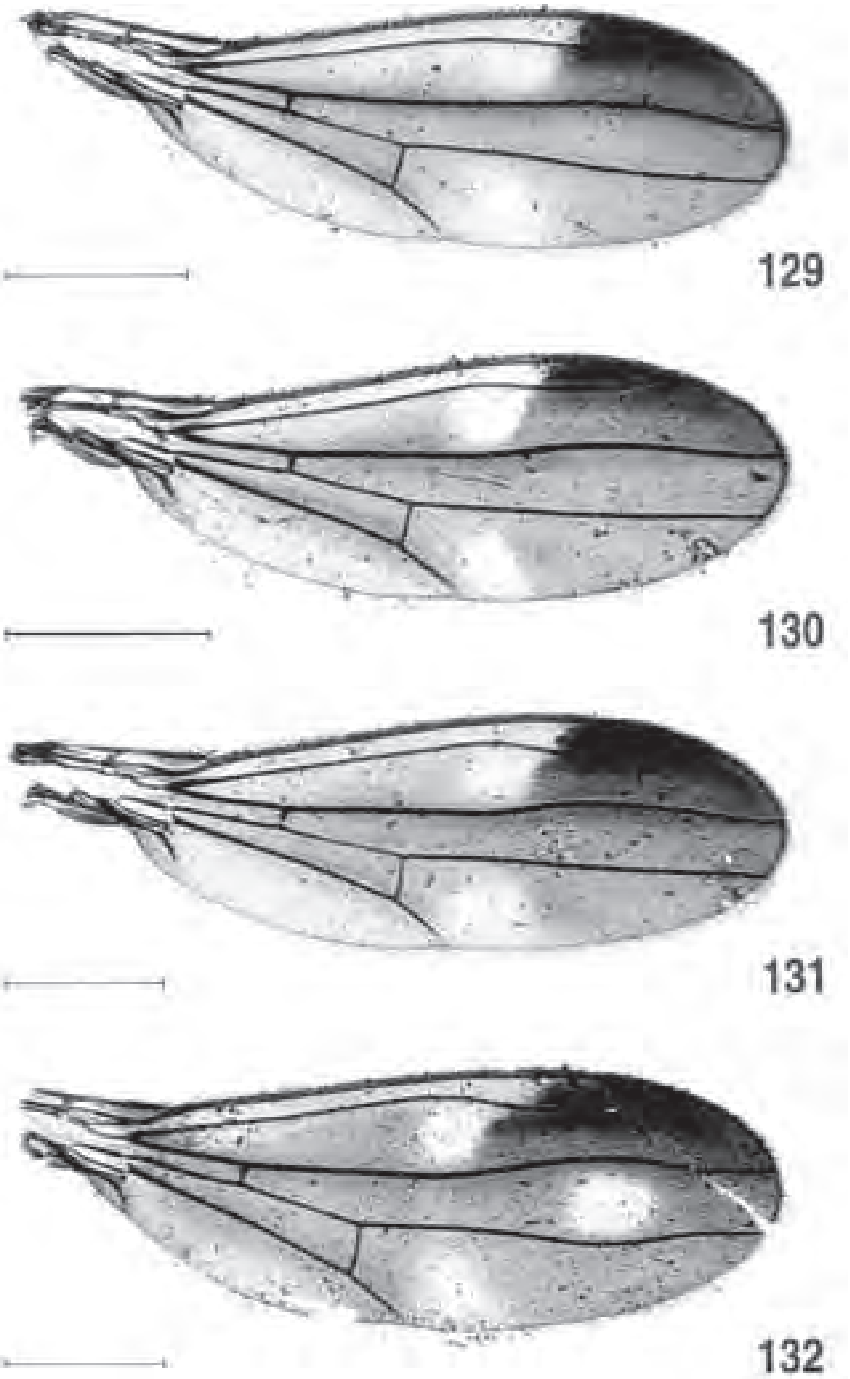
– Palpus yellow in male, pale brown in female. Only hind femur with dark brown distal annulus. Gonostylus (Figs 100, 102) with anterior margin concave and longer setose. Caudal process of transandrium strongly sinuously curved (Fig. 104) and pregonite with long setae. Female S6 more narrow (Fig. 108) and S7 narrowly fused with T7 anterolaterally, more dilated posteriorly; cercus more robust .... **A. undulatus** sp.n.



Figs 122–125. Wings of *Amygdalops* species. 122. *A. trivittatus* Frey, female holotype. 123. *A. thomasseti* Lamb, male (Uganda). 124. *A. obtusus* sp.n., male paratype (Kenya). 125. *A. simplicior* sp.n., male paratype (Nigeria). Scales = 0.5 mm.



Figs 126–128. Wings of *Amygdalops* species. 126. *A. major* sp.n., male paratype (Madagascar). 127. *A. acer* sp.n., male holotype. 128. *A. nigrinotum* Sueyoshi & Rohácek, male (Seychelles). Scales = 0.5 mm.



Figs 129–132. Wings of *Amygdalops* species. 129. *A. obscurior* sp.n., male paratype (Uganda). 130. *A. sparsus* sp.n., male paratype (Uganda). 131. *A. undulatus* sp.n., male paratype (Madagascar). 132. *A. poecilus* sp.n., female paratype (South Africa). Scales = 0.5 mm.

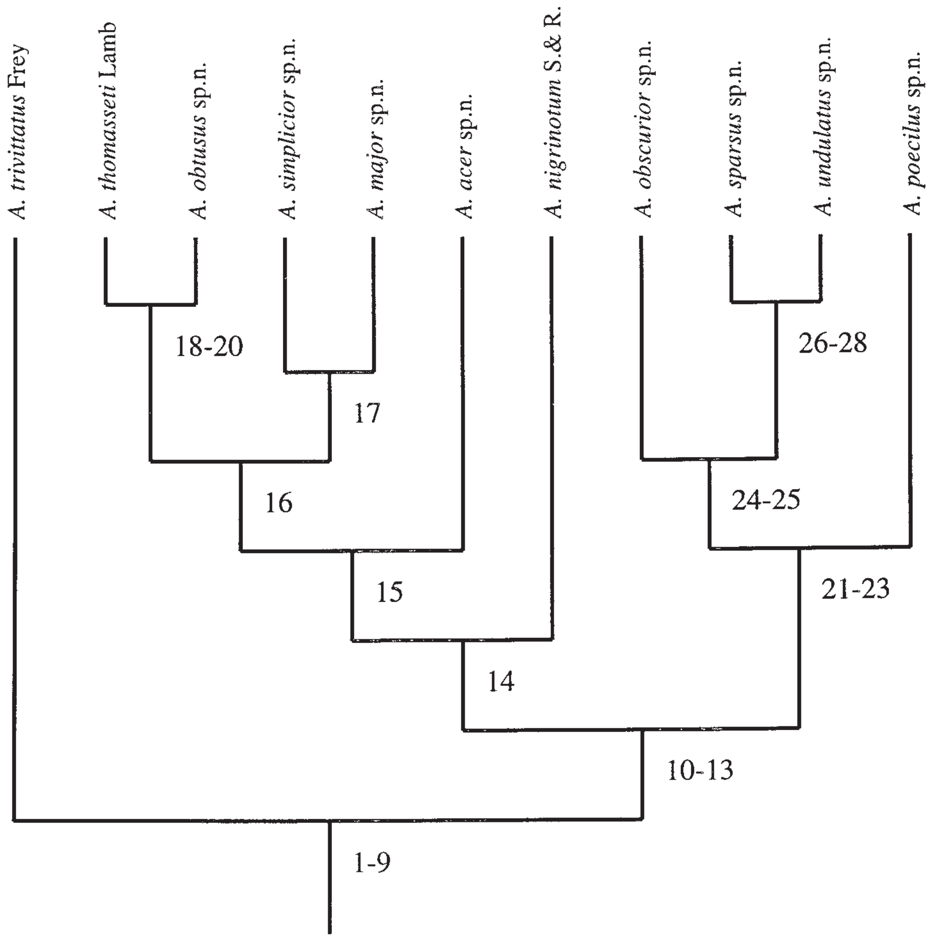


Fig. 133. Cladogram showing the inferred relationships of the Afrotropical species of *Amygdalops*.

Characters mentioned in the cladogram (apomorphic state - A, plesiomorphic - P):

1. Frontal lunule indistinct (A) - frontal lunule distinct (P).
2. vti at most two-thirds of vte length (A) - vti almost as long as vte or longer (P).
3. Arista long pectinate (A) - arista never pectinate (P).
4. prs small, reduced, less than twice as long as ac setulae (A) - prs long, 3–5 times as long as ac setulae (P).
5. CuA_1 shortened, less than twice as long as dm-cu [with exception of *A. trivittatus*] (A) - CuA_1 long, more than 3 times as long as dm-cu (P).
6. Transandrium medially with paired caudal process (A) - transandrium medially simple (P).
7. Pregonite separated from hypandrium by posterior notch (A) - pregonite fused with hypandrium also posteriorly (P).
8. Aedeagal part of folding apparatus proximally sclerotised (A) - aedeagal part of folding apparatus proximally membranous (P).
9. Female S7 modified (A) - female S7 relatively simple (P).
10. Wing with dark subapical spot (A) - wing membrane unmarked (P).
11. Longest eye diameter strongly oblique (A) - longest eye diameter less oblique (P).
12. CuA_1 shortened (A) - CuA_1 longer (P).
13. Anal lobe reduced (A) - anal long larger (P).
14. Phallophore shorter, more frame-like (A) - phallophore longer (P).

15. Caudal process of transandrium formed by a pair of divergent sclerites which are dorsally meeting or fused (A) - sclerites of caudal process subparallel, dorsally separate by membrane (P).
16. Base of distiphallus setulose (A) - base of distiphallus bare (P).
17. Basal sclerite attached to postgonite enlarged, bulging or projecting ventrally (A) - basal sclerite of postgonite smaller, hidden behind hypandrial arm (P).
18. Orbit with whitish silver microtomentum in anterior half (A) - orbit without whitish silver microtomentum (P).
19. Wing membrane clouded along R_{4+5} (A) - wing membrane not clouded along R_{4+5} (P).
20. Pregonite separated by external posterior notch from hypandrium (A) - posterior notch smaller and situated on inner side of hypandrium (P).
21. Wing with 2–3 rounded white iridescent spots (A) - wing without white iridescent spots (P).
22. R_{2+3} and R_{4+5} distinctly sinuous (A) - R_{2+3} and R_{4+5} not sinuous (P).
23. Male preabdominal sterna (S2–S5) heavily sclerotised and brown (A) - male S2–S5 weakly sclerotised and pale ochreous (P).
24. Female S6 strongly broadened (A) - female S6 narrow (P).
25. Saccus of distiphallus with small dense spines on apex (A) - saccus with long spines on apex (P).
26. Basal membrane of male internal genitalia unarmed (A) - basal membrane armed by spines and tubercles (P).
27. Pregonite projecting posteroventrally (A) - pregonite not projecting ventrally but incurved (P).
28. Female S7 narrow, with slender unpigmented medial stripe (A) - female S7 broader, without medial unpigmented stripe (P).

NOTES ON THE PHYLOGENY AND BIOGEOGRAPHY

The relationships of Afrotropical *Amygdalops* species have been analysed on the basis of cladistic principles. However, most of 80 characters used for diagnosis of the genus proved to be unsuitable for cladistic analysis because of high degree of homoplasy within the genus or the family Anthomyzidae or because occurring only in plesiomorphic states in the members of *Amygdalops*. Only 28 characters were eventually selected (see Fig. 133). The monophyly of *Amygdalops* is well supported by at least nine apomorphic characters (with respect to the genus *Margdalops*, a presupposed sister-group, see above under generic diagnosis), although three of these features (shortened vti; long pectinate arista; small prs) are not very strong synapomorphies because occurring also in some unrelated genera. The sister-group relationships of *Amygdalops* and *Margdalops* have recently been demonstrated by Roháček & Barraclough (2003). *Amygdalops trivittatus*, a species endemic to Cape Verde Is., was found to retain more plesiomorphic characters (eg. uncoloured wing, long CuA_1, large anal lobe and longer A_1) than all congeners and is therefore regarded to represent a sister-group to all other species under study, which together form a clearly monophyletic group (see Fig. 133, characters 10–13). These 10 species can be associated with two clades, one including the distinctly monophyletic *A. sparsus* group. The other clade is poorly supported by only one synapomorphy (Fig. 133, character 14) and its monophyly is not definitely demonstrated; this clade includes species of the *A. thomasseti* group being mainly characterised by similar wing pattern, which is, however, considered plesiomorphic with respect to that of the *A. sparsus* group. The clades within the more advanced *A. sparsus* group are relatively well supported by strong synapomorphies; this, however, is not true for clades within the *A. thomasseti* group where only the sister-group relationships of *A. thomasseti* and *A. obtusus* are indubitable (see Fig. 133).

As mentioned above, *Amygdalops* is considered to be of Afrotropical origin. The species richness (besides the 11 species, at least five additional unnamed species recognised in the area) and morphological diversity (cf. differences between *A. trivittatus* and *A. poecilus* sp.n.), great similarity in external features of some species versus dissimilarity of their genitalia) and also the fact that more species can live sympatrically in one locality (see below) are evidence that the evolutionary centre of the genus was in Africa.

The preliminary biogeographical analysis, based on very incomplete distributional data, revealed that a number of species are widespread throughout tropical and subtropical areas of Africa and adjacent islands (viz. *A. thomasseti*, *A. obtusus* sp.n., *A. simplicior* sp.n., *A. major* sp.n., *A. acer* sp.n., *A. sparsus* sp.n.) while only *A. trivittatus* (Cape Verde), *A. obscurior* sp.n. (known from single locality in Uganda) and *A. undulatus* sp.n. (Madagascar) have probably more restricted distribution. *A. poecilus* sp.n. is known from two distant areas (South Africa and Zaire) which host somewhat differently looking populations. *A. nigrinotum* (besides *A. thomasseti* the only species known from other biogeographical regions) is considered to be probably introduced to Seychelles from the Oriental and/or Australasian Regions where it is widespread (see Sueyoshi & Roháček 2003).

Examination of the species composition in the most speciose localities revealed that often three or more species can live sympatrically in a small area. The locality Semiliki Forest in south-west Uganda was the species-richest, with as many as six species collected together on the same day (*A. thomasseti*, *A. major* sp.n., *A. acer* sp.n., *A. obscurior* sp.n. *A. sparsus* sp.n. and one unnamed species). Other species-rich localities include Mont Hoyo in Parc National Albert (Zaire) with *A. obtusus* sp.n., *A. poecilus* sp.n. and two unnamed species, and the Madagascan sites Andasibe and Mandraka also with four collected species, *A. thomasseti*, *A. major* sp.n., *A. undulatus* sp.n. and *A. acer* sp.n.

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